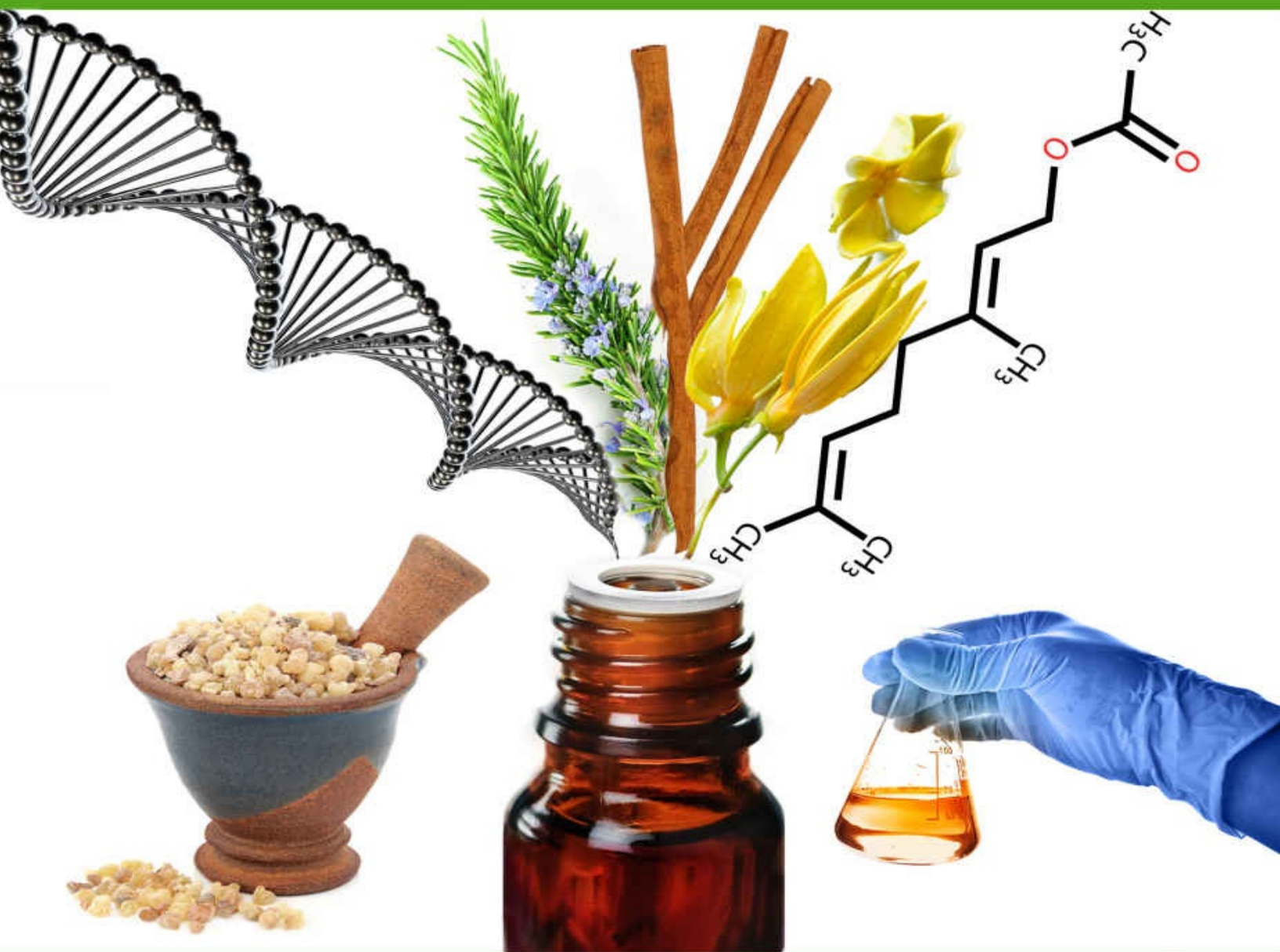


EVIDENCE-BASED ESSENTIAL OIL THERAPY

THE ULTIMATE GUIDE TO THE
THERAPEUTIC AND CLINICAL APPLICATION
OF ESSENTIAL OILS



FROM BESTSELLING AUTHOR
DR. SCOTT A. JOHNSON

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Dr. Scott A. Johnson

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My dedicated fans, who offered encouragement and kind words, and purchased my books, so that I could continue my efforts and contributions to evidence-based natural health and essential oils.

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EVIDENCE-BASED ESSENTIAL OIL THERAPY

Modern medicine, or allopathic medicine, has ushered in a wonder of scientific advancements and achievements that have greatly benefited the human race. The study of the human body and scientific research have discovered intricate details of human anatomy and physiology, helped us better understand disease cause and progression, revealed our genetic makeup, and much, much more. Organ transplants, medical imaging, and trauma treatment are just a few of the advances of modern medicine that save countless lives each year.

That being said, modern medicine is still largely ineffective in key areas. It emphasizes the treatment of symptoms rather than eradicating the root cause of disease, focuses too heavily on invasive treatments, and often causes severe side effects. In addition, modern medicine largely fails when it comes to preventive care, with most doctors lacking the knowledge or time to offer nutritional and lifestyle guidance that could significantly reduce the disease burden facing the world today. Quite frankly, nutrition and lifestyle behaviors are the foundation of health and should be “medical doctor 101,” because no amount of drugs (or supplements or essential oils for that matter) can replace eating better and being physically active.

The Case for Complementary and Integrative Medicine

Where modern medicine fails, alternative—or better said, complementary or integrative—medicine excels. Complementary medicine relies on gifts provided by Mother Nature as remedies and employs these remedies to support the body’s remarkable innate ability to heal. After all, the natural state of man is health, not disease, and the body is well equipped to combat a variety of illnesses and injuries that cause disease, especially when supported in this process.

The perception that no evidence exists regarding the safety and efficacy of natural remedies is misguided and utterly false. The truth is there are tens of thousands of studies supporting numerous natural remedies as valuable solutions for just as many health conditions and diseases. One need only search PubMed, the U.S. National Library of Medicine’s database, to find this evidence.

The best form of medicine truly is integrative—meaning it combines the best of both modern (Western) and complementary medicine, with preference to the safest, least invasive, and most effective remedy first. Both worlds have something to offer and can improve the lives of men and women if used prudently.

Essential Oils: The Natural Remedies of the Future

When it comes to natural remedies, one modality reigns supreme—essential oils. Essential oils offer several key advantages that make them ideal choices as the medicine of the future:



They work simultaneously on the emotional, physical, mental, and spiritual levels of health.

Essential oils connect the mind, emotions, body, and spirit to influence all aspects of well-being.



A virtually indefinite shelf life for most oils. When essential oils are unopened and stored in a cool, dark place away from heat and sunlight, their therapeutic value lasts for a very long time. Keep in mind that long-term storage (more than five years) of essential oils may result in some loss of therapeutic value and potency and increases the risk of oxidation of some of the essential oil compounds. Citrus oils are more susceptible to degradation because of the high limonene content (very prone to oxidation) and should be discarded if they smell rancid or appear cloudy. On the other hand, some essential oils like copaiba, cedarwood, patchouli, myrrh, sandalwood, and vetiver tend to get better with age. Once opened, follow the guidelines in the box below.

ESSENTIAL OIL SHELF LIFE*

1 Year

Citrus oils, lemon verbena, lemongrass, melaleuca (tea tree), melissa, neroli, pine, spruce oils

2 Years

Virtually all other essential oils

5 Years

Black pepper, cedarwood, copaiba, myrrh, patchouli, sandalwood, spikenard, vetiver

*Storing essential oils in the refrigerator may extend the shelf life by up to 100%.



Unmatched versatility . One essential oil can be used for a variety of purposes and health conditions.



Potency . Essential oils are highly concentrated plant extracts that offer rapid correction, regeneration, and balance, with little or no side effects. Sometimes one or two drops are all it takes to see the desired results.



Safety. Essential oils are very safe, with very few contraindications or unintended reactions when used responsibly and prudently.



Easy to use. A complicated *materia medica*, like used in homeopathy, is not necessary; in fact, many users experience positive results even when the “wrong” oil is used.

The Future of Aromatherapy: The Evidence-based Model

Over the course of recent history, three models, or systems, of aromatherapy have dominated the landscape—the British model, the French model, and to a lesser extent the German model. One could argue that a fourth unrecognized model exists—the American model that incorporates aspects of all

three. Each of these models has contributed to the current knowledge and clinical use of essential oils in different ways.

The French model emerged in the early 1900s when French chemists and physicians began experimenting with and investigating the therapeutic value of essential oils. This model advocates the neat—without diluting in carrier oil—topical application and oral administration of essential oils. A deep understanding of pharmacology, toxicology, and physiology is used to determine the therapeutic application of essential oils.

The therapeutic application of essential oils was introduced to England during the 1950s by Marguerite Maury, who encouraged the heavy dilution of essential oils before applying them to the body and discouraged oral administration because she was not a medical doctor. The British model uses small amounts of essential oils mixed in abundant amounts of carrier oil before topical administration as part of an aromatherapy massage. One of the key contributions of this model to essential oil therapy is a greater knowledge of the safety of essential oils, and possible drug interactions and health contraindications.

The German model mainly consists of using essential oils for inhalation purposes. However, Germans greatly advanced the knowledge of distillation procedures during the sixteenth century. Studies suggest that even this simple model largely relying on the inhalation of essential oils can have profound psycho-physiological effects.

Each model has its strengths and offers something useful for the essential oil practitioner and layperson alike. The American model recognized this fact and incorporated a bit of each system of thinking.

The future of essential oil therapy, and the one recommended and utilized in this book, is the evidence-based model. This model integrates the best of all models and enriches them with scientific evidence. It combines ancient traditions, established protocols, consensus of user testimonials, and scientific evidence to determine therapeutic and safe uses and protocols for countless health conditions.

Evidence-based essential oil therapy is a balanced approach to the therapeutic use of essential oils and suggests a range of dilution—from neat to highly diluted—for topical application. By suggesting a dilution range, each person is able to customize his or her essential oil usage according to his or her current state of health, body physiology, propensity towards sensitivity, and level of comfort.

Evidence-based essential oil therapy also supports the oral administration of essential oils, and suggests standardized dosages based on body weight and age. A significant amount of evidence exists to suggest that ingesting reasonable amounts of essential oils is not only safe but offers wide-ranging benefits to human health. In general, only extreme doses are problematic.

Another aspect of the evidence-based model of essential oil therapy is its use of science to determine contraindications and drug interactions. Many essential oils could interact with drugs if taken concurrently, and so it is important to be knowledgeable of these interactions. Indeed, the medical literature and clinical case reports verify that interactions do occur. In addition, some medical conditions require more cautious use of essential oils, and this too is shared as part of this model.

Science and natural remedies are not archenemies and can exist harmoniously with an open-minded practitioner. Truthfully, science is a very welcome member of the evidence-based practitioner's toolbox and can be an influential guide in deciding which oils will work best to restore homeostasis and balance to the body. Those who have used this model have likely realized that its efficacy and safety are unmatched.

The evidence-based practitioners (or average user) of essential oil therapy recognize that essential oils are a big part of a complete integrative approach to human health. This practical approach incorporates all available medical methodologies, with an emphasis on the least invasive remedy that is still effective. They prudently involve their Western physician or modern medical practitioner in their health decisions, inform him or her of their activities, and seek permission to incorporate natural remedies. This book is written with this understood and is in no way meant to replace any advice or care recommended by your primary health practitioner. ***The reader should always seek physician (or other health-care practitioner) approval before using any of the recommended protocols.***

What Are Essential Oils?

Essential oils are natural aromatic compounds and volatile liquids extracted from the seeds, roots, bark, stems, leaves, flowers, resins, and other parts of plants. These valuable liquids are most commonly obtained from plants through distillation—often by using steam. They can also be expressed mechanically or cold-pressed, as is the case with citrus oils extracted from peels. When solvent extraction is used, the end product is an absolute that contains both essential oils and other plant constituents. This oil is not a true essential oil, but it is often used by the aromatherapist. The chemical makeup of essential oils is highly complex and may consist of hundreds of distinct chemical compounds.

Essential Oil Compounds

The major compounds, or constituents, that are found in essential oils can be classified as follows:

Alcohols: The name of alcohols start with the parent terpene they were derived from and always end in “-ol.” Alcohols possess good antiseptic, antiviral, and anti-fungal properties. They are generally non-irritating to the skin and nontoxic. Alcohols are uplifting and energizing. Some examples of alcohols include linalool, menthol, borneol, cedrol, citronellol, and geraniol.

Aldehydes : Aldehydes are responsible for the characteristic fragrance, or aroma, of many essential oils. They possess anti-infectious, tonic, immune-stimulating, anti-inflammatory, vasodilating, hypotensive, antiseptic, fever-reducing, and calming properties. Oils with high levels of aldehydes, like lemongrass, may irritate the skin and cause sensitization in some individuals. Aldehydes are unstable and susceptible to oxidation when exposed to oxygen and low heat, making it important to store them properly. Aldehydes end in “-al.” Common aldehydes include cinnamaldehyde, neral, geranial, and citronellal.

Alkanes: Only a few essential oils contain alkanes and usually in very small quantities. Rose oil appears to have the highest concentration of alkanes at up to 19 percent. The purpose of alkanes in plants is to protect the plant from harmful organisms and predators, as well as decrease water and mineral loss. Rose oil contains significant amounts of alkanes. Examples include tricosane, undecane and dodecane.

Alkenes: Abundant in trees and other plants, alkenes influence the characteristic odor of essential oils. These compounds can be identified by their “-ene” ending. They possess anti-inflammatory, relaxant, anticancer, analgesic, antifungal, and antimicrobial properties. Examples include limonene, myrcene, humulene, chamazulene, and thujene.

Carboxylic Acids: Carboxylic acids are organic acids formed by the oxidation of aldehydes that usually end in “-ic acid.” They are rarely found in essential oils because they are not very volatile. They are anti-inflammatory and antiallergenic. Examples include rosmarinic acid and chamazulene carboxylic acid.

Coumarins: Essential oils that contain coumarins are typically phototoxic and should not be used immediately prior to sun or UV exposure. They are not easily extracted during the distillation process because they are not very volatile. Coumarins are blood thinning, hypotensive, antispasmodic, anticonvulsant, and antimicrobial. They include bergapten, psoralen, angelicine, citroten, and bergaptol.

Esters: Essential oils that contain esters are generally very fragrant, often producing a fruity aroma. They possess antispasmodic, anti-inflammatory, antifungal, relaxant, antimicrobial, and skin-nourishing properties. Essential oils high in esters are good choices for muscle spasms and skin rashes. These compounds are widely found in essential oils and usually end in “-ate.” Some examples of esters include linalyl acetate, geraniol acetate, eugenol acetate, and geranyl acetate.

Ethers: Ethers have similar properties and characteristics to esters but are considered much stronger compounds. Because of their powerful effect, essential oils that contain ethers should not be taken in high doses or used for extended periods. They possess antiseptic, anti-infectious, anti-inflammatory, antispasmodic, expectorant, stimulant, diuretic, and nervine (calms and soothes the nerves) properties. Ethers usually end in “-ole” and include estragole and anethole.

Ketones: These reasonably stable compounds are not easily metabolized by the liver, so those with liver diseases should use very small quantities of essential oils high in ketones and only for short periods. Ketones are extremely powerful and often considered toxic because of their potency.

Many aromatherapists suggest using them very cautiously. However, this is not the case with all ketones. Camphor, borneol, and eucalyptol are monoterpene ketones that the available body of evidence suggests may be toxic to the nervous system depending on dosage, while jasmine, fenchone, and isomenthone are considered nontoxic. Ketones aid the removal of mucous, stimulate cell and tissue regeneration, promote the removal of scar tissue, aid digestion, normalize inflammation, relieve pain, reduce fever, may inhibit coagulation of blood, and encourage relaxation. Other examples of ketones include thujone, menthone, and carvone.

Lactones: Lactones are considered antimicrobial, antiviral, anti-inflammatory, relaxing, analgesic, and fever reducing and may lower blood pressure. They are primarily found in expressed oils, but are sometimes found in solvent-extracted oils as well. Examples include bergaptene, furanogermacrene, coumarin, and alantolactone.

Oxides: Oxides are formed when an element is oxidized by exposure to the oxygen in the air. Other than eucalyptol (1,8-cineole), they are quite rare in essential oils. They are expectorants, mildly anti-

infectious, antiseptic, and anesthetic. Unfortunately, oxides are also known to cause skin irritation and sensitivity, so they should be used with caution topically. Examples include eucalyptol, linalyl oxide, and ascaridole.

Phenols: The most common phenols found in essential oils include thymol, carvacrol, eugenol, and chavicol. Their names end in “-ol” or “phenol.” Essential oils that contain phenols are highly susceptible to oxidation, may irritate the stomach lining, and are very likely to cause skin sensitivity and/or reactions, so essential oils that contain them must always be diluted before topical application. Essential oils with phenols should be used for short periods and taken in lower doses internally because they are very powerful. They are stimulating to the nervous and immune systems, act as a tonic within the body, are powerful anti-infectious agents, help rid the body of parasites, may elevate body temperature, help normalize inflammation, useful for rheumatic conditions, help expel excess gas from the intestines, diuretic, antiseptic, and have been shown to clean cell receptor sites.

Terpenes: Terpenes can be subdivided into monoterpenes, sesquiterpenes, and diterpenes based on their structure. Terpenes can influence both the initiation and progression of cancerous cells.^{[1],[2]} Another remarkable property of terpenes is their ability to cross the blood-brain barrier and enter brain tissue.^{[3],[4]} According to research, terpenes increase cerebral blood flow, thus indirectly enhancing delivery of oxygen to the brain.^[5] They are also antiviral, antibacterial, antifungal, antiseptic, analgesic, protective of DNA, antitumoral, anti-inflammatory, antispasmodic, expectorant, anti-allergenic, stimulative of organs, oxygenating of the tissues, supportive of detoxification processes, and can be both uplifting and relaxing. Monoterpenes are widely found in essential oils. Examples of terpenes include limonene, pinene, myrcene, camphene, beta-caryophyllene, farnesene, cedrene, cadinene, and sabinene.

A Brief History of Essential Oils

Ancient texts and historical and archaeological evidence—including Egyptian hieroglyphs, Chinese manuscripts, Greek physicians’ records, and biblical references—suggest that aromatic essences and essential oils have been an integral part of health and wellness for centuries. Essential oils have been used extensively throughout recorded history for medicinal and ritual purposes, psychological, social reasons, food preparation, beautification, and even as currency.

The Egyptians were among the first to use aromatic essences and resins as medicines, cosmetics, embalming agents, and as a central component of important rituals. Traces of essential oils have been discovered in Egyptian tombs and found on mummy bandages. Pots containing frankincense and another aromatic essence were discovered when Tutankhamen’s tomb was opened in 1922, and remarkably still offered a hint of aromatic scent after thousands of years being sealed in a tomb.

The ancient healing traditions of Chinese and Ayurvedic medicine similarly made use of aromatic plants to promote well-being. Ancient Buddhists were believed to have used incense for purification and ceremonial purposes. Ancient Chinese texts also refer to the use of aromatic essences for medicinal purposes.

The Greeks incorporated essential oils into therapeutic massages, and the Romans used them for personal hygiene and to promote health. The Persians borrowed from Roman, Greek, Chinese, and Indian teachings as they integrated aromatic plants into their healing system.

The Greek physician Hippocrates (460 to c. 375 BC), considered the father of modern medicine, purportedly advocated aromatic baths and fumigation with aromatics for medicinal purposes. According to historical records, he fumigated the city of Athens with an aromatic oil saving the city's inhabitants from a devastating plague.[\[6\]](#)

French chemists were credited with discovering the antibacterial properties of essential oils in 1887. The modern term aromatherapy was coined by French chemist and perfumer Rene-Maurice Gattefosse. After burning his hand in a laboratory accident in 1910, he treated it with lavender essence, or lavender oil. He explained that after applying lavender, his pain diminished, the gas gangrene ended, and over time, his hand healed without infection. Inspired by the results of Gattefosse's experiments, Dr. Jean Valnet used essential oils to successfully treat the infections and wounds of soldiers during World War II. During the 1950s, Marguerite Maury began diluting essential oils in carrier oil for direct topical application and invented essential oil blends for specific health conditions.

Today, an abundant amount of evidence is building that suggests essential oils possess significant healing properties. Clinical studies in Europe, Australia, Japan, India, Canada, the United States, and elsewhere have revealed remarkable healing properties of many essential oils. These studies have found that essential oils are effective for a variety of health concerns, including infections, pain, anxiety, depression, nausea, hormone balance, cancer, and much more.

The Importance of Essential Oil Purity and Authenticity

Pure, authentic oils—not the fragrance-grade kind that are often sold for use as perfumes or as scents—are very concentrated compounds, which are far more potent than dried herbs. They are powerful yet gentle remedies that can be used by adults, children, infants, and some pets to restore homeostasis, correct mood disturbances, physical ailments, cognitive difficulties, and even influence spiritual awareness. Aromatic botanicals and resins are mentioned throughout the Bible as integral parts of spiritual and ritual ceremonies.

Oil purity cannot be overstated. Quite frankly, there are many oils on the market that are manipulated for consistency of scent or to pad the company's pockets, rather than produced to use in aromatherapy applications. The majority of essential oils on the market today are used for perfumes—it is estimated that up to 98 percent of essential oils are used in the perfume or food industries or to add scents to candles, soaps, and other household care items. Unfortunately, even those that are intended for therapeutic application are frequently diluted or adulterated by unscrupulous traders to increase profitability, control consistency, and create oils that smell better.

A significant number of essential oil traders regularly taint their oils with cheaper—but similar—oils, isolated synthetic compounds, essential oils of similar species, or less expensive parts of the same plant. This is done to produce a more consistent taste and smell but, ultimately, to generate more profits for the trader. Some common adulterations include synthetic menthol added to peppermint oil, synthetic phenyl ethyl alcohol added to rose otto, adding lavandin to lavender, diluting citronella with lemongrass, or using cinnamon leaf instead of bark.

Synthetic compounds are less expensive and offer greater consistency in compound profile that cannot be achieved in natural plants. Plants inherently have varying degrees of compounds in them based on

harvest time, growing type, geographic region, soil quality, altitude, weather, cultivation practices, and water quality. It is remarkable how significantly an essential oils compound profile can change based on these factors. In fact, the same species can produce a different chemotype—an essential oil where one constituent is produced more abundantly or an essential oil with unique properties and compound profile based on growing conditions or location. In order to provide a constant compound profile, one must use synthetic compounds that are meticulously controlled for consistency when created in a lab.






If an oil smells differently than the natural aroma of the plant, this is not a sign of purity, but rather an indication that the constituents in the oil have been altered from what is found in nature. For example, some companies want their lavender to smell better, so after distilling the plant materials, they add a synthetic version of a compound that is naturally found in lavender, such as linalool or linalyl acetate. They do this because adding more linalool or linalyl acetate improves the fragrance of the oil. This offers no improvement in the therapeutic value of the oil—in fact, quite the opposite. It augments the smell and places the natural constituents found in the oil out of balance.

Another common adulteration seen on the market is with wintergreen oil. Wintergreen plants are naturally high in methyl salicylate—a compound similar to aspirin. In fact, wintergreen plants often contain more than 95 percent methyl salicylate. However, many wintergreen oils that are tested via gas chromatography-mass spectrometry (GC-MS) are found to contain 100 percent methyl salicylate, which is not possible in nature. What does this tell us? It tells us that the oil has been manipulated and adulterated with synthetic methyl salicylate.

The Dangers of Synthetic or Adulterated Essential Oils

Frankly, using these synthetic and adulterated essential oils can cause significant harm. While even synthetic and adulterated essential oils may produce results in the short term, long-term use may produce allergies, headaches, and chemical sensitivities, and result in body toxicity. We know that toxins—like synthetically created compounds—are harmful to the body. Those who are concerned about their health make a concerted effort to avoid toxins, chemicals, and synthetic compounds in personal care products, soaps, and more. Yet, by using an impure oil, such as those mentioned above, they are inviting these chemicals and toxins to make their bodies their home. This is counterintuitive, that a “health product” would contain harmful ingredients that can be devastating to your health.

To ensure you are using a pure oil, look for

-  a company that has expertise in the distillation process and innovative distillation equipment;
-  a company that has published essential oils research in scientific journals and takes a clinical approach to essential oil development;
-  a company that is personally involved in the farming and cultivation process through the inspection of supplier farms by a qualified expert;
-  a company that verifies purity with their own laboratories, third-party testing facilities, and educated scientists to read and interpret test results;
-  a company with oils that smell like the natural plants and whose single oils vary in aroma from

batch to batch due to inherent variations in plants. (Slight variations in the smell of each batch of oil is a good indication that Mother Nature has created the essential oil and not a lab. This trait is desirable and normal; whereas if your lavender oil always smells exactly the same, it could be an indication that the oil is adulterated.);



a company that is willing to share results from the tests their essential oils have undergone to ensure purity and authenticity, for the specific batch of oil you have purchased. If a company is not willing to share this information, you are placing blind faith in them and may very well be using a product that doesn't meet the high quality standards required for therapeutic use.

Many traders (and consumers for that matter) equate purity to organic; however, organic does not always mean pure. Although essential oils distilled from organically grown plants are greatly preferred, essential oils labeled as organic may have been contaminated during processing, improperly distilled, or extracted using chemicals or solvents. This is far from a pure oil, and not an essential oil that should be used for therapeutic purposes.

Usage and Safety Guidelines

As with any remedy, natural or otherwise, a few guidelines must be followed to maximize effectiveness:



Essential oils should be applied at the first signs of symptoms—when you first start feeling ill—or immediately following an injury. The sooner an essential oil is administered during the onset of illness or after injury, the more rapid your results will be.



Apply essential oils as often as every five minutes with severe injuries or where illness is progressing, two to four times daily if you catch the illness early, or one to three times daily for chronic conditions.



Apply oils based on body size—up to 6 to 15 drops per application for a large body (though often 1 to 2 drops is all it takes to obtain the desired results), up to 5 to 10 drops for adolescents and teenagers (but again think more is less, particularly the younger the child), up to 1 to 5 drops for small children, and small amounts of essential oil diluted to a 0.3% to 1% dilution ratio for infants and very small children. More is not always better, and this is definitely the case with essential oils, particularly as it relates to children. Children will naturally respond more rapidly and vigorously to natural remedies and so using large amounts of essential oils is not necessary. Excessive use of essential oils can lead to unintended and undesirable reactions, so start with lower amounts (like 1 to 2 drops) and work up from there if necessary. While these are averages and common doses used, it doesn't hurt to start out with smaller doses (even 1 or 2 drops) and then increase the dosage as necessary. Where specific dosages are recommended, they are generally recommended for the average size adult (154 lb. or 70 kg), so adjust the dosage accordingly.

ORAL DOSAGE GUIDELINES ⁺

Age/Weight

Total Daily Oral Dosage

Sublingual Dosage

(Per Dose)

Birth to 12 months (Up to 22 lb.)	Not recommended	Not recommended
1 to 5 years (23–44 lb.)	Not recommended	Not recommended
6 to 11 years (45–77 lb.)	3–8 drops	1 drop
12 to 17 years (78–153 lb.)	5–15 drops	1–2 drops
18 or older (154+ lb.)	7–45 drops <i>Except where otherwise recommended in this book.</i>	1–5 drops <i>(The higher end would generally be used for very mild oils)</i>

TOPICAL DOSAGE GUIDELINES⁺

<i>Age/Weight</i>	<i>Recommended Dilution Range</i>	<i>Total Daily Topical Dosage</i>
Birth to 12 months (Up to 22 lb.)	0.3% dilution	Up to 1.5 drops EO
1 to 5 years (22–44 lb.)	1.5%–3% dilution; Neat for certain conditions	Up to 15 drops EO
6 to 11 years (45–77 lb.)	1.5%–5% dilution; Neat for certain conditions	Up to 17 drops EO
12 to 17 years (78–153 lb.)	1.5%–20% dilution; Neat for certain conditions	Up to 25 drops EO
18 or older (154+ lb.)	1.5% dilution; Neat	Up to 45 drops EO

⁺The dosage recommendations are offered as a guide and should not be considered perfect and fast rules. The age, height, weight, and current health status of the individual, the essential oil being used, and the health condition being managed must all be considered. Use lower dosages with the elderly, those taking medications, and alcoholics.



Apply oils on the feet, spine, or site of injury unless otherwise directed. The feet are one of the best, and preferred, places to apply oils for a few reasons.

1. The feet are less prone to sensitivity and irritation than other areas of the body. Applying oils on the feet will reduce the probability of causing skin sensitivity and reactions. When in doubt, apply to the feet.
2. The entire body is represented on the feet. For example, the big toe is your head, the insides of both feet represent the spine, and so forth. When you apply essential oils to the feet, you can profoundly influence areas of the body far from the feet, including vital organs. If you want to

affect a specific area, system, or organ of the body through the feet please refer to the chart at the end of this book.

3. Sweat may enhance absorption of essential oils through the skin. The feet are often moist from perspiration, which provides a great location to enhance absorption. Research suggests that warm and hydrated skin can increase absorption of some essential oil compounds up to three times.^[7]



Use multiple application methods—topical, oral, inhalation, and retention—for specific health concerns or to amplify therapeutic effects. A great example of a time when this is necessary is when treating a respiratory complaint. In this case, it would be best to apply oils topically to the chest area, diffuse/inhale to get essential oil molecules into the lungs, and possibly ingest oils to boost the immune system.



Combine (blend) multiple essential oils for improved efficacy. Great results can be obtained with one single oil, but a synergistic effect may be achieved when a combination of oils is administered. Oil combinations often work on different aspects of a health condition helping to get to the root causes of illness.



Continue essential oil therapy for a few to several days following relief of symptoms to ensure full and deep healing has occurred. If you don't continue therapy after symptoms cease, the cause of the illness may transfer to other tissues within the body and remain dormant until reactivated (usually by diet, environmental exposures, or inactivity) to cause illness again.



A general rule of thumb is that for every year you have suffered with a chronic condition, it may take one month of therapy to correct the condition. For example, if you have suffered from migraines for three years, it will likely take at least three months to establish harmony and homeostasis in the body again. However, if you experience an acute condition and don't obtain results within a few hours—often within minutes—try a different oil, or different method of application. You may also have used insufficient or too much essential oil for the therapy to be effective. Each person is biologically unique and will respond differently to different oils; what works for one person may not work for another. Allow your body to “tell” you which oil to use by the way you respond and feel. Not all effective oils are listed for every condition.

Essential Oils Cautions with Children

Essential oils that contain significant amounts of 1,8-cineole (potentially over 50%), camphor (potentially over 20%), menthol (potentially over 25%), thujone, and methyl salicylate should be avoided at certain ages in children. Avoid the use of peppermint, rosemary, eucalyptus, ravintsara, niaouli, camphor, bay laurel, sage, Spanish sage, cardamom, spike lavender, and lavandin in children under 3, particularly around the nose and mouth. Use each of these oils very cautiously, both topically and diffused, for children up to age 5 (see individual oils for more details and further recommendations). In the case of sensitive children, it may be necessary to avoid these oils up to age 10, though this is very rare. Blends that contain these individual oils are less likely to pose a risk as other oils may balance their intensity, but the safest approach is to treat these blends the same way you would an individual oil. Avoid wintergreen topically or diffused near children under age 12. It is quite uncommon—thought to affect a very, very small minority of children—but essential oils with

these compounds may cause adverse reactions in very young children, including central nervous system problems,[\[8\]](#),[\[9\]](#),[\[10\]](#) respiratory distress (difficulty breathing or labored breathing), nystagmus (involuntary eye movement)[\[11\]](#),[\[12\]](#) and toxicity,[\[13\]](#),[\[14\]](#),[\[15\]](#),[\[16\]](#),[\[17\]](#),[\[18\]](#),[\[19\]](#) and this reaction can occur from inhalation only.

Although the chance of these few essential oils causing harm is extremely remote, it is important to be extra cautious when it comes to the health and safety of children, and no parent wants to see his or her child experience any of these adverse reactions. Very young children, from birth to 24 months, are more likely to experience adverse reactions because their breathing and airway defensive reflexes are still maturing. One study found that when forty-four premature infants were exposed to menthol fumes they experienced altered airway resistance such as temporary cessation of breathing or a decrease in breathing rate.[\[20\]](#)

Some parents have found that they can use the essential oils associated with respiratory problems on children under 5. If you have used any of the oils mentioned and your child did not experience a reaction, it may be that your child is not sensitive to the compounds associated with problems. However, parents are strongly encouraged to consider alternatives that have proven to be just as effective without the risks of unintended reactions—particularly since there are so many essential oils with similar properties.

Wintergreen contains methyl salicylate, which is very similar to aspirin. Ingesting as little as 2.5 ml can be extremely toxic to children, and several well-documented fatalities have resulted after the ingestion of as little as 4 ml in young children.[\[21\]](#),[\[22\]](#),[\[23\]](#),[\[24\]](#),[\[25\]](#),[\[26\]](#),[\[27\]](#) Wintergreen should be avoided by children under age 12 to prevent salicylate poisoning and serious adverse events.

Do not apply any of these essential oils on or near a child's face and avoid diffusing them near young children. This includes applying them on your own body in a place where they would be exposed to them. Use mild oils like copaiba, lavender, German chamomile, lemon, and frankincense instead.

Avoid oral administration of essential oils with children under the age of 3. Oral administration in children under the age of 6 should be limited to the mildest of essential oils and very small doses. Some essential oils may cause acute toxicity in children under the age of six if administered orally (almost always very large quantities). Always check the cautions section of this book before using any essential oil with your children.

Please see the specific section titled “ESSENTIAL OILS FOR INFANTS AND CHILDREN” for children, which outlines mild protocols for the most common health conditions that children experience. Children naturally respond more rapidly and notably to small amounts of essential oils, making the use of large amounts unnecessary. As a child matures to adulthood (based on size and age both), he or she may use the adult protocols.

Do Lavender and Tea Tree Oil Cause Breast Growth in Young Boys?

A number of websites warn parents against using lavender and tea tree oil on their young boys because of a study that claims the topical application of these oils causes prepubertal gynecomastia (enlargement of the breast tissue in males).[\[28\]](#) However, this conclusion is flawed and hotly contested by other scientists. First, the researchers failed to analyze the commercial products that allegedly caused the breast growth, so we don't even know for sure if the products contained lavender or tea

tree oils. Another flaw to the study authors' conclusion is that none of the boys' hormone tests were abnormal except one (case two), who had elevated testosterone levels (not estrogen). In addition, the products that were used in each of the three cases would not allow sufficient absorption of essential oils into the bloodstream to disrupt the endocrine system in such a way to cause gynecomastia. Lastly, the study authors conducted *in vitro* testing to determine the estrogenic activity of the oils, which concluded that only extreme levels of the oils produced any estrogenic effects, and these estrogenic effects were one million times less than that of estradiol. These extreme levels couldn't have been achieved with the products allegedly causing the breast enlargement.

The first case reports the use of a "healing balm" containing lavender shortly before the breast development occurred in a four-year-old boy. Since the breast enlargement occurred shortly after the topical application of the product, it is unlikely that enough lavender could have entered the blood to produce the breast enlargement.

The second case alleges that a ten-year-old boy experienced breast enlargement after using a styling gel and shampoo with lavender and tea tree oil as ingredients. A later report suggests that the hair care products used were analyzed and contained very low concentrations to virtually undetectable amounts of tea tree oil (lavender content was not verified). Based on the low concentrations of tea tree oil and the fact that one of the two products is a wash-off product, it is highly unlikely that either product caused the breast enlargement. Again, not enough of the oils could have entered the bloodstream to cause the condition.

The third report claims that a boy (almost eight) experienced breast enlargement after frequently using a lavender-scented soap and occasionally applying a lavender-scented lotion. Interestingly, his fraternal twin also used the lavender-scented lotion (but not the soap) and did not experience breast enlargement. Very little essential oil is used in scented soaps, and the product is washed off leaving very little time for absorption. Combining these facts with the fact that the twin brother did not experience breast enlargement suggests that something else caused the gynecomastia, not the essential oils.

Traditional use and other clinical trials have not reported endocrine-disrupting effects of lavender and tea tree oils. Given the number of young boys regularly exposed to these essential oils, it would be logical that thousands of cases of gynecomastia would be reported if this was a real concern. Based on the evidence, it is highly unlikely that reasonable topical application of lavender and tea tree products will result in any breast development in young boys. Indeed, animal research suggests that not even the topical application of up to 100 mg/kg (equivalent to over 7.5 ml in a 154-pound adult human) of lavender oil disrupted endocrine system function, nor the subsequent production of developmental and reproductive hormones.^[29]

Hormone-sensitive Cancers and Phytoestrogen-containing Oils

A great deal of controversy surrounds the role of phytoestrogens among women with a history of or greater risk of hormone-sensitive cancers. Hormone-sensitive cancer cells have receptors that activate when hormones bind to them. Once activated these receptors alter gene expression and may stimulate uncontrolled cell growth. If the cancer cells contain estrogen receptors, the cancer is called estrogen receptor-positive, or ER-positive. If the cancer cells contain progesterone receptors, the cancer is considered PR-positive. If the cancer cells lack estrogen and/or progesterone receptors, the

cancer is called ER- or PR-negative.

Drugs used for hormone-sensitive cancers block ovarian function (the ovaries are the primary source of estrogen in premenopausal women), inhibit aromatase activity (an enzyme involved in estrogen production), or bind to estrogen receptors to prevent estrogen from binding. Given our current understanding that phytoestrogens can bind to estrogen cell receptors and either block or mimic the action of estrogen,^[30] it is likely that phytoestrogens have the ability to reduce the risk of estrogen-positive cancers. The current body of scientific evidence seems to support this conclusion. For example, both sclareol and anethole possess anticancer activity against the MCF-7 ER-positive breast cancer cell line.^{[31],[32]}

However, some scientists suggest that the ability of phytoestrogen byproducts to exert mild estrogenic activity may increase the risk of hormone-sensitive cancers.^{[33],[34]} One study concluded that late-stage cancer cells (without ERbeta—an estrogen receptor that is associated with a reduction in the spread and metastatic activity of breast cancer cells)^[35] increase tumor activity when exposed to phytoestrogens.^[36] However, given the important role of ERbeta in breast cancer prevention, it is possible that the lack of ERbeta receptors had more to do with the increased tumor activity than the phytoestrogens.

Limited research has been conducted regarding phytoestrogens found in essential oils and cancer risk. Clary sage contains the phytoestrogen sclareol, which is structurally similar to estradiol. However, the available research does not suggest that clary sage increases the risk of estrogen-dependent cancers.^{[37],[38],[39],[40],[41]} In fact, one study determined that the presence of estradiol (originating from natural production within the body) increased the spread of breast cancer cells—with or without the presence of phytoestrogens—but when only the phytoestrogens were present, breast cancer cell apoptosis (destruction) increased.^[42] Another study found that the dietary phytoestrogen genistein (from soy) reversed BRCA1 gene deficiency—the dysfunction of which is strongly associated with increased breast cancer risk—and triggered the expression of apoptosis-related genes.^[43]

At present, the science surrounding phytoestrogens and whether they increase or decrease hormone-sensitive cancers is inconclusive and debated. However, moderate intake of dietary phytoestrogens is suspected of reducing cancer risk based on a lower incidence of cancer among populations that consume more dietary phytoestrogens.^{[44],[45]}

Overall, essential oil phytoestrogens are considered balancing, with the ability to moderately distinguish body needs and either compete with or mimic estrogen. It is likely that the reasonable use of phytoestrogen-containing essential oils may have a protective effect against some cancers (even among ER-positive populations). Based on the available evidence, it is recommended that women with a history of or higher risk of hormone-sensitive cancers consult their physician for his or her recommendation as to whether to use essential oils that contain phytoestrogens.

Contraceptives and Essential Oils

Interactions between essential oils, particularly those that contain phytoestrogens or interact with estrogen receptors, and oral contraceptives has not been fully investigated. Essential oils that contain phytoestrogens like anise, fennel, and caraway have demonstrated estrogenic effects, but significantly milder than naturally produced or synthetic estrogen.^[46] Some essential oil compounds (citral,

geraniol, nerol, and eugenol) do not exert estrogenic activity, but they are able to displace 17beta-estradiol from estrogen cell receptors (ER α and ER β).^[47] However, this displacement was not significant enough to affect the activity or function of estrogen.

Oral contraceptives contain synthetic progesterone and/or estrogen to suppress ovulation or make the cervical mucous impenetrable to sperm to prevent conception. Whether phytoestrogens amplify or block this effect is not fully known. But it is reasonable to suppose that reports of interactions would be available in populations that consume large amounts of phytoestrogens in their diet if interactions were occurring.

While science has yet to fully investigate the relationship between phytoestrogens and contraceptives, it is highly unlikely that the weak estrogenic activity of essential oils with phytoestrogens will interfere with oral contraceptives that have a much stronger activity. Dietary phytoestrogens appear to pose no risk according to the available research—which is sparse. Researchers reported that soy phytoestrogens do not alter the menstrual cycle or hormone levels, even among those taking an oral contraceptive.^[48] Currently, no evidence exists that suggests phytoestrogens found in essential oils will interfere with oral contraceptives because their activity is significantly weaker than that of synthetic hormones.

Essential Oils Care during Pregnancy

Always consult your OBGYN before using any essential oils. Very little information exists regarding the safety of essential oils during pregnancy and lactation. Because of this, caution and common sense is advised, especially during the first trimester, with a sensible approach being to focus on essential oils that are mild (citrus oils, for example) and avoid more than normal dosages. In addition, one should be very cautious with oral administration during pregnancy because it is highly likely that essential oils cross the placenta to the fetus. Knowing this, it is recommended to limit oral consumption of essential oils to a dosage range of 10 to 25 percent of the standard adult dose.

Some oils contain compounds that can be toxic and prevent conception, harm the fetus, or result in birth defects—usually when used in significant quantities. The use of the following common oils should be avoided by any method of application throughout pregnancy and while nursing: aniseed (anise), basil (methyl chavicol, CT), birch, blue cypress, camphor, carrot seed, cassia, cinnamon, fennel, hyssop, mugwort, myrrh, oregano, parsley seed and leaf, pennyroyal, ravensara, rue, sage, tansy (*Tanacetum vulgare*), thuja, tarragon, wintergreen, and wormwood.^{[49],[50],[51],[52],[53],[54],[55],[56],[57],[58],[59],[60]} Clove should be used cautiously as very large doses may be problematic during pregnancy. Also, essential oils with high levels of citral (geranial + neral), methyl eugenol, myristicin, and camphor should be used cautiously and in very small quantities throughout pregnancy and while breast-feeding, such as lemongrass, lemon myrtle, lemon verbena, bay laurel, citronella, melissa, Spanish sage, spike lavender, ravintsara (camphor CT), and nutmeg.^{[61],[62],[63],[64]} While this list is comprehensive, it does not include all possible safety issues during pregnancy and nursing. It is strongly advised that lower doses (stronger dilution ratios) of mild oils are used during pregnancy and lactation and to always consult your OBGYN before using essential oils during pregnancy and lactation.

Essential Oils before and after Surgery or Medical Procedures

Avoid topical and oral essential oil usage for a minimum of forty-eight hours before and up to one week (though usually two to three days is sufficient) after surgery to prevent excess bleeding or interference with anesthesia or other medications administered during the surgery. Diffusion is generally acceptable, but always seek your physician's approval before using essential oils while under medical care or recovering from a medical procedure/surgery.

Epilepsy Cautions with Essential Oils

Those with epilepsy and who take antiseizure medications should be very cautious with or avoid essential oils containing significant levels of camphor, methyl salicylate, pinocamphone, 1,8-cineole (eucalyptol), sabinyl acetate, fenchone, pulegone, and thujone.[\[65\]](#),[\[66\]](#),[\[67\]](#) Common essential oils that should be avoided by those with epilepsy, Parkinson's disease, or who are prone to convulsions include: eucalyptus, fennel, myrtle, rosemary, blue spruce, blue tansy, and wintergreen, bay laurel, birch, cajeput, camphor, cardamom, hyssop, genipi, buchu, thuja, calamint, savin, spike lavender, artemisia, lavandin, niaouli, feverfew, sage, Spanish sage, pennyroyal, tansy, ravensara, ho leaf (ravintsara), boldo, mugwort, spearmint (pulegone-menthone-isomenthone CT), thyme (alpha-terpineol, linalool, and thuyanol CTs), yarrow, Western red cedar, and wormwood.[\[68\]](#) These essential oils contain compounds that could exacerbate or trigger seizures and convulsions or may interact with antiseizure medications.

Not all potentially problematic essential oils have been listed, and those prone to seizures are advised to check GC-MS reports for the problematic compounds in essential oils they desire to use. While peppermint is often recommended as an essential oil to avoid and contains pulegone, it is in diminutive doses, and the reported convulsions associated with pulegone were with extremely large doses—5 ml to 30 mL—of pennyroyal (up to 87 percent pulegone).[\[69\]](#) Moreover, administration of peppermint oil to animals did not cause seizures, and in fact demonstrated the ability to protect mice from drug-induced seizures.[\[70\]](#)

In younger children, the primary compound found in eucalyptus essential oil, eucalyptol (1,8-cineole), may cause convulsions, which is why it is not recommended for very young children.[\[71\]](#),[\[72\]](#)

In addition to the essential oils mentioned, epileptics are advised to avoid the carrier oils evening primrose oil and borage seed oil as they may lower the seizure threshold.[\[73\]](#) These oils should also be avoided by those with Parkinson's disease.

Essential Oils and the Eyes

Keep essential oils away from the eyes and other sensitive areas. Essential oils should never be placed directly in the eye, and great caution should be exercised when applying near the eye. Always dilute oils before applying near the eye, and they should be applied widely around the eye. The orbit, or eye socket, can be used as guide by applying oils outside the orbit area, but never inside. Some reports of damaged corneal tissue, corneal abrasions, vision loss, or chemical burns have occurred from applying oils directly into the eye.[\[74\]](#)

Essential Oils and the Ears

Never put oils directly in the ears. Some anecdotal reports suggest that this may result in a ruptured eardrum and, at the very least, will cause severe pain. Apply copious amounts of a carrier oil if this

occurs. The best method for ear administration is to place one to two drops of oil, possibly diluted, on a cotton ball and insert the cotton ball into the ear.

Photosensitizing Essential Oils

Avoid sun exposure for twelve to twenty-four hours following the application of photosensitive oils—angelica, bergamot, grapefruit, lemon, lime, ginger, tangerine, and some other citrus oils. These oils contain compounds known to be phototoxic—making the skin more susceptible to damage by UV exposure. The ability of an oil to be phototoxic depends on the concentration of photosensitizing compound(s) in the oil, such as geranial, neral, bergapten, oxy-peucedanin, citronellal, cinnamic alcohol, cinnamic aldehyde, and alpha-amyl cinnamic aldehyde, and the duration of exposure to UV rays or sunlight.^{[75],[76],[77]} Exposing your skin to UV rays or sunlight after applying a photosensitizing oil could result in pigmentation, blisters, rash, or even serious burns. The preferred place to apply photosensitizing oils is the bottoms of the feet.

Essential Oils with Thymol

Oils with high levels of the phenol thymol should not be taken orally long-term, nor in large doses. Thymol has a longer half-life—the time it takes the body to metabolize or excrete half of the dosage—than most essential oil constituents, meaning it will remain in the body longer.^[78] It is recommended to avoid administering more than 16 drops per day and to discontinue use for a minimum of forty-eight hours after seven days of administration. This primarily applies to thyme, although oregano, balsam fir, goldenrod, and blue tansy all have trace to minute amounts of thymol.

HALF-LIVES OF SOME ESSENTIAL OIL COMPOUNDS IN HUMANS

Compound	Route	Half-life (hours)
1,8-cineole ^[79]	Inhaled	0.50–2.95
Alpha-pine ne ^[80]	Inhaled	4.8
Beta-pine ne ^[81]	Inhaled	5.3
Limonene ^[82]	Inhaled	1.25
Linalool ^[83]	Topical	0.23
Menthol ^[84] (Menthol glucuronide)	Oral	0.9
Methyl salicylate ^[85]	Bath	2.4–4.0
Thymol ^[86]	Oral	10.2

Essential Oils: Kidney Transplants and Compromised Kidneys

Those with kidney disorders are more susceptible to experience nephrotoxicity, and therefore, caution is warranted for both oral and topical administration. It would be wise to significantly reduce typical dosages of both methods of administration in order to reduce the risk of nephrotoxicity, particularly orally. Diffusion is generally acceptable and some physicians have approved the topical use of essential oils as well. Check with your physician to determine his or her recommendation for essential oil use.

Medical Implants and Essential Oils

Some have expressed concerns about possible interactions between essential oils and plastic or metals implants (hip, knee, etc.). When essential oils are applied topically they will enter the bloodstream via the capillaries before they would come in contact with a medical implant. Oral use is even less of a concern, as the essential oils will be metabolized then a portion will enter the bloodstream to be delivered to the cells and tissues that need them, not a medical implant. There has never been a documented case of essential oils causing a problem with medical implants and so this should not be a concern.

Breast Implants and Essential Oils

Some women who have undergone breast augmentation have expressed concern about the possible interaction between essential oils and breast implants. Essential oils will only penetrate a few layers deep in the breast tissue before they enter the bloodstream via the capillaries located in the breast tissue over the implant. It is highly unlikely that an essential oil (topically applied) will penetrate the dermal (and potentially muscle tissue depending on the insertion point of the implant—over or under the pectoral muscle) tissue that covers breast implants. Oral use poses even less risk of interacting with or degrading breast implants. There has never been a report of any essential oil degrading breast implants; therefore oral and topical use of essential oils should not be a concern for those who have had breast augmentation.

Essential Oils: Immunosuppressive Drugs and Patients

Little is known concerning interactions with immunosuppressive drugs, and the simultaneous use of essential oils, and limited research has been conducted with herbs. Some immunostimulating herbs have been implicated in interfering (decreasing or enhancing the effectiveness of) immunosuppressive medications.^{[87],[88],[89],[90],[91]} In theory, because essential oils are significantly more potent than herbs, they too could enhance or decrease the effectiveness of immunosuppressive medications, especially immunostimulating essential oils. Until research suggests otherwise, it is prudent to avoid the use of essential oils orally, and be very cautious with the topical application of essential oils, especially among those who are taking medications to prevent the rejection of transplanted organs and tissues. Seek your physician's approval before using essential oils in this case.

Essential Oils during Chemotherapy and Cancer Treatment

Another poorly understood potential interaction is the simultaneous use of essential oils with chemotherapy and radiation treatment for cancer. Presently, evidence does not exist as to whether the

immune mechanisms and other pharmacological activity of essential oils could potentiate or interfere with conventional cancer treatment. One review of 280 articles concluded that “nonprescription antioxidants and other nutrients do not interfere with therapeutic modalities for cancer.”^[92] In fact, the study found just the opposite, that antioxidant supplementation enhanced the ability of cancer therapy to kill cancerous cells and increased patient survival rate. A conflicting review determined that high-dose antioxidant supplementation interfered with tumor control by conventional cancer therapies and reduced survival rates of patients.^[93]

It is widely known that essential oils can enhance the penetration of other substances through the skin, but the interaction of essential oils with the range of cancer drugs used is still unanswered. Because of this, it is recommended to avoid the use of essential oils topically and orally for a minimum of forty-eight hours prior to treatment and four to seven days following chemotherapy or radiation treatment. Most chemotherapy drugs will exit the system within three days of use, despite the fact that side effects continue long after this due to associated tissue and organ damage.

Inhalation of essential oils can greatly benefit the nausea and discomfort often associated with cancer treatments.^[94] It is strongly recommended that you discuss the possibility of inhaling essential oils (like lemon, peppermint, ginger, and spearmint) during your treatments. These oils can simply be added to a cotton ball and placed in an oxygen mask or inhaled directly from the cotton ball. Likewise, personal care products that contain essential oils are acceptable when undergoing cancer treatment.

Is It Possible to Build a Tolerance to Essential Oils?

Many aromatherapists suggest, as do I, limiting the use of the exact same oil or oils to twenty-one days before taking a one-week break. This is recommended for two reasons. One, this reduces the risk of sensitization to the essential oil or oils that you are using. And, two, this reduces the chance that your body will develop a resistance or tolerance to the effectiveness of the essential oils you are using.

Bacteria readily develop resistance against drugs, which expose bacteria to the exact same chemical composition each time allowing for adaptation. The bacteria does this to preserve its existence. However, this has not been observed frequently with natural plant extracts, whether from herbs or essential oils. This is because plant extracts, including essential oils, naturally have chemical and structural variance that limits the ability of the bacterium to adapt and become resistant.^{[95],[96],[97],[98]} Very rarely is resistance reported among plant extracts.^{[99],[100]}

Despite resistance being a remote possibility, some users have reported that the long-term use of the same essential oils has reduced its efficacy. While it may be that the person’s health condition progressed to cause a decrease in effectiveness, the rotation of essential oils still has merit. Herbal remedies have been rotated in a similar manner for centuries to maintain their effectiveness.

Essential Oil Use with Medications

Essential oils work in harmony with the human body; however, with all potent substances, caution and common sense is required. Some essential oils (as well as blends and supplements that contain them) have the potential to interact with medications and/or are contraindicated with certain health conditions. If you take medications while using essential oils, you should check with your doctor or

pharmacist for possible interactions or contraindications before using essential oils at the same time.

Some choose to use medications and essential oils concurrently. If you chose to do so, it is best to use essential oils approximately four hours following the administration of medications and to reduce the normal (or recommended) essential oil dose by half.

Although every effort has been made to find drug interactions, known cautions, and contraindications with essential oils, the list may not include every possible caution required. Consequently, always check with your doctor or pharmacist before using medications and essential oils together.

Reducing Reliance on Medications

You should never reduce or stop taking any medication without your health-care professional's approval. Do not do so unless your provider tells you to! Doing so can be dangerous and have serious consequences. However, with physician approval it is possible to reduce reliance on medications in favor of a natural option with reduced side effects.

1. You should discuss the possible effects you might experience as you work toward medication reduction with your physician.
2. Slowly introduce small doses of the essential oil you wish to use about four hours after taking your medication (unless there is an obvious risk and contraindication).
3. You need to reduce your medication gradually over a period of weeks or months. This largely depends on how long you have been taking the medication. As a guide, the Royal College of Psychiatrists recommends the following for antipsychotic medication reduction: treatment for less than eight weeks—reduce medication over one to two weeks; treatment of six to eight months—taper medication over six to eight weeks; and longer treatment periods, reduce medication by 25 percent every four to six weeks.^[101] People who take weeks to months to reduce their medications are more likely to be successful.
4. Follow up regularly with your health-care practitioner.

TOPICAL APPLICATION

Topical administration of essential oils requires care, and often dilution, due to the potentially irritating, sensitizing, and photosensitizing compounds contained in essential oils. The evidence-based model allows for neat to highly diluted topical applications according to your comfort level and current state of health.

Once applied to the skin, essential oil compounds rapidly penetrate the tissues and enter the bloodstream quickly, circulating throughout the body. Scientists suspect that compounds below 500 to 600 Daltons in molecular weight readily cross the skin layers and are absorbed by the body.^[102] Since most essential oil compounds are well below this threshold, penetration of and entrance into the bloodstream by these compounds is logical.

Molecular Weight of Common Essential Oil Compounds

Alpha-pinene

136.2

Beta-pinene	136.2
Bisabolol Oxide A	238.4
Carvacrol	150.2
Cinnamaldehyde	132.2
Eugenol	164.2
Limonene	136.2
Linalool	154.3
Menthol	156.3
Thymol	154.3

Molecular Weight of Common Vegetable Oil Fatty Acids

Arachidic Acid <i>Jojoba Oil</i>	312.5
Lauric Acid <i>Coconut Oil</i>	200.3
Linoleic Acid <i>Grapeseed Oil, Sesame Oil</i>	280.5
Oleic Acid <i>Olive Oil, Almond Oil</i>	282.5

SOURCE: US National Library of Medicine, National Center for Biotechnology Information, PubChem.

Because cells are surrounded with a lipid membrane, essential oils are attracted to and able to penetrate the cell membrane to deliver nutrients to the cell nucleus.^{[103],[104],[105],[106],[107]} This suggests that essential oils can affect cell function and behavior, thus influencing overall well-being. At the same time, the aroma of the essential oil that is inhaled travels to the limbic system where a cascade of psychophysiological effects is triggered in response.

Enhancing Absorption of Essential Oils through the Skin

There are ways to enhance the absorption, and therefore the effectiveness, of essential oils. Absorption and effectiveness of essential oils may be enhanced by applying a warm wet towel over the area of application and then covering this wet towel with a warm dry towel to retain the heat. Wet skin also helps to improve absorption. Applying essential oils immediately following a warm bath or shower opens the pores to significantly improve absorption. Another way to improve absorption is by directing warm air on the site of application (for example, from a blow dryer).

One study estimated that 75 percent of various applied oils were absorbed through the skin if the area was covered after application. If the skin was left uncovered, about 4 percent of the oil was absorbed.^[108] Another study found that about 10 percent of lavender oil was absorbed when diluted

to a 2 percent dilution ratio, peaking at about twenty minutes after application. Ninety minutes post application, the lavender compounds tested for had reduced to almost zero.^[109] This suggests frequent topical application is necessary to maintain a therapeutic effect.

Where to Apply Essential Oils

The application site will depend on the purpose of application. However, the feet are often the preferred site of application in most cases for the reasons mentioned earlier. Applying oils diluted with a carrier oil is strongly encouraged to avoid sensitization and irritation, especially among those with a chronic skin condition, allergies (food or seasonal), or with an autoimmune or autoinflammatory condition. These people are more likely to experience discomfort, sensitivity, or a reaction to the topical application of essential oils. Dilution is particularly important for “hot” oils like oregano, thyme, and cinnamon (for all populations). The maximum strength recommended should be reserved for serious injuries, burns, infections, wounds, or severe illnesses, and should only be used for short periods by those who are sensitive.

Carrier Oils

Carrier oils are an integral part of aromatherapy and possess their own therapeutic value. They are necessary to reduce the risk of skin sensitivity from topical application and provide soothing comfort if irritation or redness occurs. Moreover, they can extend the therapeutic action of essential oils, prolonging the benefits you receive. This is particularly true if you are administering the essential oils to influence mood and emotions because it lengthens the time the aroma is available to the olfactory system.

Vegetable oils make up the bulk of carrier oils used in aromatherapy. It is important that you use an unrefined, cold-expeller pressed or cold-pressed vegetable oil. If it doesn't say unrefined, cold-expeller pressed or cold-pressed on the label—even if it says “pure”—it is likely a refined product extracted by high pressure, intense heat, and possibly solvents. Organic oils are also preferred to avoid exposure to toxic fertilizers, pesticides, and fungicides.

Carrier oils contain fatty acids, fat-soluble vitamins, minerals, and other beneficial nutrients. The fatty acids contained in vegetable oils may help reduce cholesterol levels, strengthen cell membranes, and reduce the appearance of fine lines and wrinkles. Olive oil is loaded with vitamins A, K, and omega-3 and -6 fatty acids. Some carrier oils contain gamma linolenic acid (GLA)—borage seed oil and evening primrose oil. Some studies suggest that GLA may stop cancer progression and angiogenesis,^[110] and GLA is used to create prostaglandins—hormone-like substances that are involved in many body processes, including immune system function.

The average shelf life of a carrier oil is about six months when kept in a cool and dark place. Carrier oils are susceptible to oxidation and rancidity. When oxidized, carrier oils break down and form free radicals, which, left unchecked, damage cells, accelerate the aging process, and have a detrimental effect on the skin. It is advised to keep carrier oils in the fridge—with the exception of avocado oil—in order to preserve them. This may increase the shelf life of the oil to nine months, but be mindful that it may cause them to solidify or turn cloudy, so they will need to be removed to return to room temperature before use. Extra-virgin olive oil will generally keep well even when stored outside the refrigerator. On the opposite spectrum is wheat germ oil, which becomes rancid after only a few

weeks.

Common Carrier Oils and Bases and Their Properties/Benefits

Aloe Vera : While different from aloe vera gel, aloe vera oil has a long history of medicinal and cosmetic use. It is cooling, hydrating, rejuvenating, tonifying, and healing to the skin. It is useful for preventing scars. It has been used medicinally for healing wounds, treating burns, relieving muscle pain, diminishing varicose veins, and restoring damage to tissues. It possesses antifungal, antiseptic, antimicrobial, and anti-inflammatory properties, and the lectins it contains stimulate immune system activity. Aloe vera contains seven of the eight essential amino acids; vitamins A and C; and the minerals magnesium, zinc, copper, and selenium.

Avocado Oil : Rich in monounsaturated fats, lecithin, vitamins A, B, D, E, sterol, lutein, beta-carotene, and essential fatty acids, avocado oil provides significant healing properties for the skin. Look for avocado oils that are dark—the darker the better. Clear or pale green oil is an indication the oil has been refined and highly processed. It has a fruity smell and should be blended with complementary aromas. It is hydrating, nourishing, and easily absorbed into the skin. Indeed, it enhances the penetration of other oils into the skin. It is appropriate for all skin types, but particularly useful for aged, dry, or fragile skin. Some aroma-therapists like to combine it with essential oils and create a natural sunscreen because of its natural ability to block UV rays. Avocado oil encourages cellular regeneration, reduces the appearance of wrinkles, and may improve skin elasticity.

Beeswax: Mostly used as an emulsifier and thickening agent to create creams, lotions, and salves, beeswax is an excellent skin softener. It hydrates the skin, promotes a clear complexion, and tightens the pores without clogging them making it an excellent choice for acne. Beeswax may also be used to form a protective barrier on the skin or as a lip balm. Products with beeswax should not be used by those who are allergic to bees.

Borage Seed Oil: Borage seed oil is often taken internally to support skin health, but external application also has therapeutic benefits. Its high levels of gamma linolenic acid make it very suitable for damaged and dry skin, stretch marks, eczema, or psoriasis. It is also useful for relieving female reproductive complaints, such as premenstrual syndrome, endometriosis, and menopausal symptoms. Borage seed oil may promote a youthful glow to the skin, and its scent is uplifting. Avoid with epilepsy or convulsions.

Caprylic Capric Triglycerides : Caprylic capric triglycerides are a specialized esterification of coconut oil with a very light, silky, and nongreasy feel. This carrier oil offers several key benefits, including nourishing the skin, helping to extend the shelf life of products due to its antioxidant properties, and provides a noticeable silkiness to the skin. Caprylic capric triglycerides encourage rejuvenation of the skin and form a protective barrier for the skin. In addition, it is nonallergenic making it an excellent choice for those with sensitive and oily skin.

Castor Oil: Made by pressing the seeds of the *Ricinus communis* plant, castor oil is an excellent skin moisturizer. It has been used for hundreds of years, and possibly even by the Egyptians thousands of years ago, to encourage healthy skin and hair. It supports circulation through the scalp and helps hair shafts retain moisture. Castor oil moisturizes dry, flaky skin and soothes irritated skin. It is commonly used internally after 39 weeks of pregnancy to induce labor, and in packs to help relieve constipation

in the elderly. It is reported to possess antimicrobial, immune stimulating, and lymph stimulating properties. In addition, it is anti-inflammatory and helps relieve pain, making it an excellent choice for pain mixtures—particularly sprains. Caution is warranted when using castor oil orally as taking more than the recommended dose or prolonged use (more than one week) can cause fluid and electrolyte disturbances.^[111]

Cocoa Butter: Obtained from roasted cocoa bean, cocoa butter is solid at room temperature but liquefies easily at about body temperature. Cocoa butter is an excellent choice for creating suppositories, creams, and lotions. It softens and rejuvenates the skin, may help prevent stretch marks, helps reduce the appearance of scars, and forms a protective barrier for the skin. Pure cocoa butters have a slight chocolate aroma that may not blend well with some oils.

Coconut oil: Virtually odorless, coconut oil is a very popular carrier oil because its scent doesn't compete with the essential oils that are added to it. With the exception of fractionated coconut oil, coconut oils remain semi-solid at room temperature. It softens the skin and helps to reduce dry, inflamed, and itchy skin. Coconut oil is a useful and beneficial carrier oil when applying essential oil blends to the scalp or hair. Interestingly, inhabitants of the Pacific Isles are less prone to baldness and graying of hair, and some attribute this to their practice of anointing the hair with coconut oil from childhood. It is often used as a base for sunscreens because of its natural ability to block about 20 percent of the sun's UV rays.^[112] A significant amount of the fatty acids contained in coconut oil are lauric acid, which can kill bacteria, viruses, and fungi.

Dimethyl sulfoxide (DMSO) : DMSO is an organo-sulfur compound that significantly increases the penetration, effectiveness, and absorption of essential oils and other substances through the skin. It is naturally derived from wood pulp and is also found in spearmint oil, barley, malt, asparagus, and corn.^[113] Because of its ability to increase the absorption of some compounds through tissues, including the skin, drug manufacturers have investigated it for use as a transdermal drug-delivery system. It is most often combined with another carrier like aloe vera to calm its scent and reduce the possibility of skin irritation. It possesses antibacterial, analgesic, and anti-inflammatory^[114] properties and is often combined with or applied over the top of pain-relieving essential oils. The FDA approved the use of DMSO for the treatment of interstitial cystitis in 1978; however, it is currently available only by prescription or for use as a solvent only.^[115] DMSO may increase the effect of myriad drugs, so it should not be used in tandem with medications. It has been reported that DMSO dissolves synthetic fibers, so contact with clothing should be avoided.

Evening Primrose Oil: One of the most expensive carrier oils, evening primrose oil is generally added to other carrier oils to reduce the cost of aromatherapy blends. Besides the cost, evening primrose oil is highly unstable and susceptible to oxidation when exposed to air or heat. It is a rich source of GLA, making it helpful for such conditions as dry and scaly skin, eczema, psoriasis, dry skin, and tender breasts. Avoid with epilepsy or convulsions.

Grapeseed Oil: Grapeseed oil is suitable for all skin types and is nonallergenic. It is a very gentle moisturizer and leaves the skin feeling smooth. It is odorless, tasteless, and easily absorbed. Grapeseed oil contains the potent antioxidant flavonoid oligomeric procyanidin (OPC), which helps protect against cellular and tissue damage. Grapeseed oil contains high levels of vitamin E and helps promote healthy circulation, aids the healing of wounds, speeds up cell regeneration, helps shrink swelling from cysts, reduces the appearance of blemishes and scars, reduces varicose veins, and

encourages a youthful glow of the skin. It also has anti-inflammatory properties making it a great choice to add to a soothing aromatherapy blend.

Hazelnut oil: Hazelnut oil easily penetrates the skin without drying it. It has appreciable amounts of vitamins A, B, and E, as well as essential fatty acids. Hazelnut stimulates the circulatory system, is a great skin toner, and powerful astringent. It moisturizes and rejuvenates the skin and is a useful carrier oil for acne. The primary drawback to this carrier oil is that it shouldn't be used on those with a nut allergy.

Jojoba : Jojoba is a liquid ester similar to the one in our skin and not an oil. It rapidly penetrates the skin, is nonallergenic, and is beneficial to all skin types. It doesn't go rancid and has a very long shelf life. It balances the skin's pH, helps to unclog pores, hydrates the skin, and may prevent stretch marks. Jojoba is popular for acne blends because it helps unclog pores and helps control the buildup of excess sebum. It contains a waxy substance that mimics collagen and is antibacterial to prevent or treat skin infections. It is also a popular carrier oil for the hair, where it increases its luster, reduces the appearance of gray hair, encourages healthy hair growth, and decreases scalp dryness.

Olive oil: Olive oil contains essential fatty acids, vitamins E and A, minerals, and proteins that are beneficial to the skin. It is revitalizing and moisturizing to dry, chapped, and scaly skin and is known to help wounds heal. It is indicated for sensitive skin and may help soothe eczema and psoriasis. Olive oil contains the anti-inflammatory and antioxidant compound hydroxytyrosol that prevents free-radical damage to skin cells. In addition, olive oil contains the anti-inflammatory compound oleocanthal, which inhibits both the Cox-1 and Cox-2 enzymes responsible for inflammatory conditions within the body.^[116] To receive this benefit, one would need to ingest at least two ounces of olive oil daily.

Sesame Seed Oil: With a long history of use dating back thousands of years, unrefined sesame oil is highly nutritious. Rich in vitamins A, B-complex, and E, it is protective of the skin, and research suggests it blocks 30 percent of the sun's UV rays.^[117] It also contains the minerals calcium, copper, iron, magnesium, and zinc; the latter of which is essential for the production of healthy collagen and provides more elasticity to skin. Sesame seed oil contains the compound sesamol—a compound that studies suggest protects against DNA damage caused by radiation.^{[118],[119]} It is often used as a carrier for blends created to soothe arthritis or rheumatism. Some aromatherapists suggest sesame seed oil helps protect the body from the negative effects of chlorine in swimming pools. It is naturally moisturizing and useful for conditions like eczema, psoriasis, and dry skin.

Shea Butter: Shea butter leaves the skin feeling oily and waxy and is particularly beneficial to speeding the healing process of skin. It contains high levels of nonsaponifiable fats (keratin, allantoin), vitamins A, E, and F. Shea butter is softening and moisturizing to the skin, and its enhancement of microcirculation aids wound healing, cellular rejuvenation, and scar tissue repair. Its mild properties make it a useful base for baby care products. Shea butter is an excellent choice for chapped or mature skin.

Sweet Almond Oil : Sweet almond oil is widely used as an aromatherapy carrier oil and an excellent choice for general aromatherapy applications. It is easily absorbed, slightly viscous, very oily, and carries a delicate, sweet smell. It contains vitamins A, B1, B2, B6, D, and E, as well as trace minerals. It is appropriate for all skin types, but particularly beneficial for sensitive, stressed, dry, or

inflamed skin. Sweet almond oil is nourishing and protective of the skin and helps to relieve dry, itchy, and inflamed skin conditions, such as eczema, psoriasis, and dermatitis.

Vitamin E Oil: The vitamin E family (tocopherols and tocotrienols) helps prevent cell damage from free radicals, which unchecked can lead to tissue damage, collagen damage, and interfere with the formation of healthy skin cells. It is often added to other carrier oils as a stabilizer, and as little as 0.05 percent can help protect other carrier oils from oxidation. Vitamin E oil is useful for wound healing, radiation burns, scars, and protection from sun damage. If you are prone to breakouts, vitamin E is thick and greasy, so it may exacerbate this condition.

Wheat Germ Oil: A valuable source of vitamin E, wheat germ oil helps relieve dermatitis, enhances circulation, promotes healthy skin cell formation, encourages younger looking skin, and helps reduce scarring. It is a very heavy and sticky oil with a slightly nutty aroma. Wheat germ is beneficial for dry and aged skin and has been used to soothe sore muscles.

Skin Sensitivity and Reactions to the Topical Application of Essential Oils

Potent substances like essential oils require respect, particularly as you first introduce your body to these concentrated healing compounds. In some cases, sensitive individuals, or even those without a sensitivity, can become sensitive to essential oils through overuse or through the use of undiluted essential oils. It has also been observed that those with allergies (food or seasonal), chronic skin conditions, or autoimmune and autoinflammatory conditions are more prone to sensitivity, even pure oils of the highest quality.

When applying topically, first do a skin patch test by applying one drop of oil on the underside of the arm and observing for irritation or redness. If irritation or redness occurs after application, apply a pure carrier oil (olive, coconut, jojoba, etc.), not water. For very sensitive skin, place 1 to 2 drops of oil in a teaspoon of carrier oil before application. When possible, thoroughly cleanse your skin before applying essential oils topically. Essential oils can react with perfumes, deodorants, and other chemicals present on the skin leading to sensitivity.

Contrary to popular belief, skin reactions when using essential oils are not always detoxification reactions, and the continued use of essential oils will not correct this reaction. It is also not entirely accurate to say that essential oils cannot cause allergies because they are devoid of nitrogen compounds—peptides, proteins, and amino acids. While these compounds are typically involved in a true antigen-antibody allergy, other substances devoid of them are known allergens. For example, neither penicillin nor nickel contains these compounds, but they are still known to cause allergic reactions.

Typically, when an allergy occurs, your body's immune system responds inappropriately to an inert substance by creating antibodies, which are responsible for defending the body against foreign invaders. While it is true—as of this writing—that scientists have not observed antibodies produced in response to essential oil compounds, there are many documented cases of allergic reactions to essential oils, especially topical use. [\[120\]](#), [\[121\]](#), [\[122\]](#), [\[123\]](#), [\[124\]](#)

Indeed, multiple studies report that essential oils and fragrance compounds can act as prehapten and prohapten, sensitizing compounds, or skin allergens through varying pathways within the body. Haptens are potent sensitizing substances that cause powerful contact allergies by common reactions,

such as air oxidation (autoxidation), photo-activation, chemical bonding, or attachment to a carrier protein in the skin after topical application, which forms a complete antigen via enzyme catalysis (bioactivation).[\[125\]](#),[\[126\]](#),[\[127\]](#),[\[128\]](#),[\[129\]](#),[\[130\]](#),[\[131\]](#),[\[132\]](#),[\[133\]](#),[\[134\]](#)

Essential oil compounds such as aldehydes and ketones are electrophilic—molecules attracted to electrons that participate in chemical reactions involving the exchange of electrons. These electrophilic substances can bind to proteins within the skin to trigger an allergic reaction.[\[135\]](#)

Research suggests that these adverse skin reactions occur in up to 96 percent of individuals who are more sensitive to aromatic compounds, depending on the combination of oils used and their chemical structure.[\[136\]](#),[\[137\]](#),[\[138\]](#)

Moreover, some essential oils or essential oil compounds (especially monoterpenes like limonene) are more prone to oxidation than others.[\[139\]](#),[\[140\]](#),[\[141\]](#),[\[142\]](#) When these oils are exposed to the air they combine with oxygen to form skin allergens known as peroxides or hydroperoxides.[\[143\]](#) This risk is greater as the essential oil ages. In other words, the essential oils are not allergenic themselves but are activated in the skin or before skin contact to become powerful sensitizers and contact allergens. Furthermore, the journal *Contact Dermatitis* reported in October of 2013 that twenty-eight essential oils and some compounds can be categorized as contact allergens in humans.[\[144\]](#)

Reactions observed on the skin when using essential oils topically—whether at the site of application or not—are best categorized as contact dermatitis. Contact dermatitis is characterized by red, sore, itchy, and inflamed skin after direct contact with a substance that can take from several days to weeks to heal. Two types of contact dermatitis can occur, allergic contact dermatitis and irritant (nonimmunological) contact dermatitis. Contact urticarial (hives) may also occur, which is the immediate—usually within minutes to hours—formation of a rash or hives following exposure to a substance. It will usually fade away after several hours to a few days. It is important to avoid such sensitization because as many essential oils users have discovered the sensitivity is extremely difficult to reverse and may even become permanent in some individuals.

Normally the immune system employs protective mechanisms against harmful substances (antigens) that enter the body, but occasionally the immune system triggers a unfavorable reaction known as hypersensitivity reactions to essential oils. These reactions are divided into four categories, but only two are correctly applied to essential oil therapy, type 1 and type 4 reactions.

Type 1 reactions are immediate and typically involve the production of antibody immunoglobulin E (IgE), which binds to sensitizing substances and activates the release of substances from mast cells (like histamine) that triggers inflammation and an allergic reaction. Although possible, it is extremely rare for a Type 1 reaction to result in anaphylaxis—a serious and potentially life threatening reaction that occurs within seconds to minutes of exposure to a substance. Type 1 reactions are less common than Type 4 reactions.

Type 4 reactions involve delayed hypersensitivity reactions caused by T cells rather than antibodies. Contact dermatitis would fall into this category. When an essential oil is applied topically it diffuses through the skin and in the case of a sensitivity reaction interacts with proteins and changes its properties to become an antigen. This modified protein travels through the lymph system where it activates T cells. T cells secrete molecules that trigger inflammation and allergic responses in

response to the antigen. It is very difficult to reverse Type 4 reactions once they occur, because memory cells produced from prior exposure to the essential oil remain in the body to respond the next time the same antigen is encountered. Type 4 reactions usually occur from one to a few days after exposure to a substance and commonly result in contact dermatitis. This contact dermatitis can persist for days, weeks, or in severe cases months.

Type 4 reactions are generally built up to over prolonged use and exposure to essential oils, particularly if they are applied neat too often. In other words, it is not really the single application of one essential oil or an essential oil that causes the reaction. Instead the reaction occurs after applying the single oil or blend because sensitivity has been building up due to chronic overexposure to significant quantities of essential oils that has built up for months to years.

Reports of sensitization among aromatherapists and chemists has also been reported. Studies suggest that those who are regularly exposed to significant amounts of essential oils based on their occupation can experience type 4 hypersensitivity reactions to essential oils, and these reactions can result in sensitivities to multiple oils.[\[145\]](#),[\[146\]](#),[\[147\]](#),[\[148\]](#) What we can learn from these studies is that excessive use of essential oils, or perhaps prolonged daily exposure to the same essential oils (particularly neat) may increase the risk of hypersensitivity reactions and sensitization.

An anaphylactic reaction to essential oils is extremely rare, but possible. Interestingly an immediate hypersensitive systemic reaction that resulted in anaphylaxis in a thirty-eight-year-old male reportedly caused by tea tree oil did not produce antibodies (IgG or IgE).[\[149\]](#) But a subsequent wheal and flare response (a characteristic irregular red raised bump, or “wheal,” surrounded by areas of redness that appears on the skin in response to administration of a substance, usually as part of an allergy test) to an allergy test did determine he was sensitive to tea tree oil.

In the very extraordinary chance that an essential oil does cause an anaphylactic reaction, seek emergency medical help immediately. Anaphylaxis is a severe and potentially life-threatening medical emergency that requires prompt medical attention.

Some tell-tale symptoms of anaphylaxis include hives, flushed or pale skin, airway constriction, swollen tongue or throat, trouble breathing, weak or rapid pulse, very low blood pressure, dizziness, anxiety, fainting, headache, confusion, nausea, vomiting, and/or diarrhea. Anaphylaxis usually starts with redness and irritation of the skin, quickly followed by hives, then swelling and inflammation of various areas of the body. The swelling can lead to airway constriction and trouble breathing. Because anaphylaxis is systemic (affecting the whole body), it can lead to the other symptoms mentioned as well.

If these symptoms occur within minutes, or in less common cases half-hour or longer, after the administration of an essential oil contact emergency medical services for help. Time is of the essence if the person is experiencing trouble breathing, loses consciousness, or faints. It is also useful to know that limonene and lavender may reduce anaphylactic reactions, but it would be unwise to apply or administer either of these essential oils in a life-threatening situation.[\[150\]](#),[\[151\]](#)

Those with known allergies, food sensitivities, autoinflammatory or autoimmune disorders, and skin conditions (eczema, psoriasis, etc.) are more likely to develop skin sensitivities to essential oils. Essential oils that aromatherapy texts suggest may cause skin sensitivity in those with allergies

include basil, cedarwood, German chamomile, clary sage, clove, fennel, ginger, juniper, lemon, lemongrass, orange, peppermint, pine, melaleuca, thyme, and ylang ylang. This is an extensive list and only includes essential oils recommended in the protocols in this book. Many with allergies find they can still use these essential oils as long as they are diluted heavily (at least a 3% dilution or greater). In addition, continuous daily exposure to the same oil(s) increases the risk of skin sensitivities, and clinical observations suggest that a tolerance may be built up with repeated use of the exact same oils without a break. Because of this, it is recommended that you rotate the essential oils you use after twenty-one to thirty days of continuous use, with a seven-day rest before reusing the same oil(s). Another reason for this recommendation is to avoid building up a tolerance to any one, or group, of essential oils. Interestingly, men appear to be more susceptible to adverse skin reactions than women are, and stress and lack of sleep also make skin sensitivities more likely.[\[152\]](#)

To reduce the risk of oxidation and formation of hydroperoxides (1) essential oil caps should be replaced immediately after use, (2) citrus oils are best stored in the refrigerator, (3) keep bottles out of direct sunlight and away from heat sources, and (4) consider purchasing essential oils with antioxidants added to reduce the risk of oxidation.

Ways to Avoid Sensitization

One way to avoid sensitization is to dilute essential oils with a pure carrier oil, particularly when first introducing them onto your body. Combining essential oils with a pure carrier oil may help prevent some of the oxidation that occurs and reduce the risk of skin sensitivity and irritation. This practice may also be desirable when the objective is to keep the essential oil at the site of application for as long as possible (for example, when treating certain skin conditions like eczema or dermatitis). By combining an essential oil with a carrier oil, it helps prevent evaporation and may prolong the time you are able to benefit from both the topical application and the subsequent inhalation of the aroma.

Another strategy is to rotate the site of essential oil application. For example, you may start with the feet, then move progressively to the ankles, knees, side of the torso, spine, side of the chest, sternum, and wrists. The following is a dilution recommendation in a range. People with known sensitivities and who are new to essential oils should generally use the essential oils diluted with more carrier oil.

DILUTION RATIOS

<i>DILUTION %</i>	<i>Approximate Number of Drops of Essential Oil Per Teaspoon(s) of Carrier Oil^a</i> (The number of drops per teaspoon of carrier oil for general use and for those with sensitivities)
0.3%	1 drop per 2 teaspoons
1.5%	2 drops per teaspoon
3.0%	4 drops per teaspoon
5.0%	7 drops per teaspoon

MAXIMUM STRENGTH DILUTION RATIOS

(The maximum number of drops per teaspoon of carrier oil for a maximum strength application)








<i>DILUTION %</i>	<i>Approximate Number of Drops of Essential Oil Per Teaspoon of Carrier Oil</i>
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20%	30 drops per teaspoon
33%	48 drops per teaspoon
50%	73 drops per teaspoon
NE (Neat)	Essential oil only, no carrier oil added

^a Rounded to the nearest whole drop for ease of use. One teaspoon is equivalent to 4.93 mL. On average 1 ml of essential oil contains 30 drops, though this figure can range from 20 to 40 depending on the essential oil and dropper used. If you want to make things simpler for the maximum strength dilution ratios, you can use the following: 20% dilution—1 drop EO per 5 drops carrier, 33% dilution—1 drop EO per 3 drops carrier, and 50% dilution—1 drop EO per 1 drop carrier.

Reversing Sensitivity

If sensitivity or contact dermatitis occurs, one must stop using the offending—and possibly all—essential oils topically until the skin heals. Immediately after sensitivity occurs apply carrier oil to the area and then wipe off with a dry cloth. Continue adding carrier oil and wiping it off with a dry cloth until the person experiences relief. My experience has been that diffusing and oral consumption do not result in the same reactions, but you may want to eliminate those two methods of application as well to allow your body to reset. The healing process may take several days or even weeks and, in rare cases, may become chronic. In addition to removing contact with one or all essential oils, here are a few other options that may help speed the healing process. Because each person responds differently, many options are recommended to determine which will best help you manage and reverse your skin reaction.

-  Apply a natural, thick and creamy, fragrance-free lotion or Shea butter to the area often to keep the skin moist. This is probably the most important, and effective, way to reduce the irritation. It keeps the skin moist and allows it to heal.
-  Apply cardiospermum cream or gel to the area as directed on the product label. Cardiospermum is a natural anti-inflammatory and possesses cortisone-like properties.
-  Apply a cold washcloth or ice to the area of irritation 2 times daily.
-  The supplement N-acetyl cysteine may reduce the hypersensitivity response by increasing glutathione production in the skin and decreasing the inflammatory response.[\[153\]](#),[\[154\]](#) Take 200-400 mg up to 3 times daily.
-  Mix together one-quarter cup each of baking soda and water. Massage mixture into the irritated area and leave in place for twenty minutes before rinsing thoroughly. Baking soda helps neutralize acids, makes the skin more alkaline, and helps to remove dead skin.
-  Fill a bowl with about half a cup of oatmeal (not the sweetened kind from the store) and then add enough hot water to make a paste-like consistency. Allow to cool until lukewarm and then apply to the irritated skin, leaving it in place for twenty to thirty minutes before rinsing thoroughly with water. Oatmeal will help cleanse and moisturize the skin, and it possesses antioxidants that may help neutralize inflammation.
-  Apply aloe vera directly to the irritated skin up to six times daily. The anti-inflammatory and antimicrobial properties of aloe vera will help to soothe irritation and encourage healing.

-  Open a shark cartilage capsule and mix with one teaspoon of Shea butter. Apply mixture to the skin twice daily.
-  Consider taking 3 drops each of lavender, German chamomile, and blue tansy in a capsule one to three times daily to reduce the histamine-reaction and abnormal immune activity related to the reaction.
-  Take high doses of a broad-spectrum probiotic (aim for 20 billion or more organisms) nightly just before retiring to bed. Probiotics support the immune system and may alleviate allergies, particularly in children.
-  Consider taking high doses of MSM (methylsulfonylmethane), up to 10 grams daily, which is useful for allergies and may nourish the skin.
-  Some people have found cleansing helps relieve this situation. Start with a colon cleanse and then continue cleansing if necessary.
-  If these natural methods are ineffective in reducing the itching and sensitivity, it may be time to consider an oral antihistamine and/or topical hydrocortisone cream to get the reaction under control. Excessive scratching could lead to a worsening of the symptoms and even damaged or scarred skin.

Once sensitivity and the contact dermatitis clears, it is recommended that you slowly reintroduce essential oils to your body one single oil at a time in highly diluted ratios. It is possible that the topical application of very concentrated or neat (not recommended for those who have experiences sensitivity) essential oils will result in some irritation permanently, so it may be necessary to continually use the lower dilution ratios (0.3% to 5%) to avoid further sensitization and discomfort.

INHALATION

Inhalation is the safest way to administer essential oils, but still produces remarkable psychophysiological outcomes. Inhalation provides a number of benefits, including soothing throat infections, overcoming mental fatigue and exhaustion, encouraging the expulsion of mucous, relieving stress, anxiety and nervous tension, and purifying the air—including removing toxins, killing airborne germs to prevent the spread of infections, altering mood, and encouraging restful sleep. It is a must with respiratory concerns because essential oil molecules enter the lungs, bronchi, bronchioles, and alveoli. If your sinuses are congested or affected, you must inhale deeply and hold this breath for as long as possible. This allows the essential oil molecules to travel to the sinuses where they can provide benefit rather than into the lungs, as is the case when you breathe normally. Inhaled essential oils also directly influence the limbic system—the center for memory and emotions—significantly influencing mood, stress, anxiety, and depressive symptoms.

In the absence of power, diffusing may prove challenging, making it necessary to be creative, such as inhaling essential oils over a bowl of hot water. This can be accomplished by adding 1 to 6 drops of a few essential oils to three inches of hot water that is cool enough to touch with your hand, and then cover your head and the container of water with a towel and breathe deeply (depending on the oil used this can be quite intense, so closing your eyes is recommended). Do not use more than 20 drops of essential oil with this method, or you may overwhelm your brain and lungs.

Alternately, place 1 to 2 drops of essential oil in one palm, rub palms together and cup over nose and mouth to breathe deeply. Another method that can be used for inhalation when without power is to place 1 to 6 drops of essential oil on a tissue or cloth and inhale as desired. If power is available, add 4 to 12 drops of essential oil to diffuser and diffuse near the ill person or inside the desired room.

The Powerful Influence of Aromas

The influence of essential oil inhalation and the subsequent psychophysiological actions that follow is quite extraordinary. When an aroma is inhaled, odor molecules travel up the nose and attach to olfactory cell-receptor sites. Once bound to the olfactory nerves, odor molecules travel to the olfactory bulb, where the odor is significantly intensified. The intensified odor stimulates the bipolar receptor to fire, and impulses are transmitted to the limbic system. The limbic system is a complex set of structures—hypothalamus, hippocampus, amygdala, and limbic cortex—that regulates the endocrine and nervous systems and is responsible for controlling memory, learning, emotions, instinct, motivation, and influential to sleep, libido, appetite, thirst, heart rate, blood pressure, breathing, stress levels, and hormone balance. In response to the odor, the limbic system initiates physiological responses in the body by releasing hormones, chemicals, and neurotransmitters that influence myriad body functions, including pain perception, appetite, metabolism, libido, wakefulness, insulin production, body temperature, relaxation level, and sense of well-being. Eventually, this cascade of events modifies emotions and behavior and generates memories that cause profound psychophysiological responses.

Essential Oil Inhalation: Asthma and Chronic Respiratory Disorders

One concern often raised when diffusion is the method of application is the possibility of aggravating asthma or other chronic respiratory disease symptoms. Research suggests that terpenes, particularly limonene, may exacerbate bronchial hyperresponsiveness,^[155] which is a hallmark symptom of asthma. Because of this, direct inhalation of essential oils very high in limonene—mainly citrus oils, some of which are up to 95 percent limonene—should be limited or avoided by those with asthma or other chronic respiratory conditions. In addition, those that are sensitive to fragrances or strong odors may need to avoid direct inhalation of essential oils, and use dilutions of less than 3 percent for topical application.

While myrtle contains the terpenes alpha-pinene (up to 56 percent) and limonene (up to 12 percent), it is known to reverse respiratory distress. Lavender also has small amounts of terpenes, but it has proven beneficial with asthma patients. Ginger is another essential oil with multiple terpenes, such as zingiberene, curcumene, sesquiphellandrene, cam-phene, beta-bisabolene, beta-phellandrene, alpha-pinene, and beta-elemene, but is useful in asthma because of its bronchodilatory properties.

While not proven definitively in science, it is possible, and some people report, that essential oils that are known to cause respiratory difficulty in children could exacerbate asthma and bronchial hyperresponsiveness in those who are more susceptible—people with asthma or other chronic respiratory disorders. Based on this assumption, it would be wise to be cautious with or avoid essential oils high in camphor, eucalyptol, and menthol among more sensitive people.

These findings suggest that some volatile compounds may aggravate asthma symptoms. Conversely,

inhalation of lavender essential oil has been found to suppress allergic airway inflammation, suggesting it may be beneficial for those who suffer with asthma.[\[156\]](#) Myrtle and ginger are known bronchodilators, so they may also be useful in relieving asthma symptoms and bronchial hyperresponsiveness.[\[157\]](#),[\[158\]](#)

Sensory Irritation During Essential Oil Inhalation or Diffusion

Sensory irritation, such as nosebleeds, eye, ear, or throat irritation have occasionally been reported among people who have inhaled essential oils. This phenomenon is likely caused by irritation of the mucous membranes among more sensitive populations (younger children, persons with nasal allergies or chemical sensitivities).[\[159\]](#),[\[160\]](#),[\[161\]](#) When enough of the volatile essential oil compounds are present in the air, sensory pathways within the body are triggered that may lead to irritation, stinging, burning, itching, changes in temperature sensations, nosebleed, and headache.[\[162\]](#)

It appears that terpenes are more likely to cause this type of sensory irritation than other essential oil compounds.[\[163\]](#),[\[164\]](#),[\[165\]](#) In addition, the available evidence suggests that oxidized terpenes[\[166\]](#) and low humidity may exacerbate or trigger sensory irritation. Based on this knowledge, it is sensible for those with known chemical sensitivities, chronic respiratory condition, or who are prone to headaches and nosebleeds to avoid direct inhalation of essential oils and to limit diffusing.

ORAL ADMINISTRATION

Essential oils can be administered orally, which allows for greater precision in dosing, increased convenience, and good bioavailability. Oral administration may also increase the risk of drug interactions and stomach irritation (see below), so it is strongly advised that you check for contraindications, safety precautions, and drug interactions before administering oils orally. The risk of stomach irritation can be reduced if you take the capsules with food rather than on an empty stomach. It is strongly recommended that you always take essential oils orally with food.

To administer essential oils orally, add the desired number of drops of essential oil to a vegetable capsule, in a beverage (almond or rice milk, herbal tea), in honey, or directly on or under the tongue. Another way to ingest essential oils is to place a drop in your mouth and swish it around to mix it with saliva. This can be very beneficial for oral health.

Administering oils in a capsule will reduce the likelihood of throat and oral cavity irritation. If oil is added to water to ingest, separation will occur, and much of the oil will remain in and be absorbed through the buccal cavity (the portion of the oral cavity enclosed by the lips, cheeks, and gums). This may result in irritation of the mucous linings in the mouth. Essential oils can also be taken sublingually (under the tongue), which results in rapid absorption due to the high concentration of capillaries (tiny blood vessels) under the tongue. Essential oils will be absorbed directly into the bloodstream with this method without needing to go through the digestive process.

Oral Administration and Irritation of the Gastrointestinal System

Some essential oils users are concerned about the long-term effects that ingesting essential oils may have on the oral cavity, esophagus, stomach, and intestinal mucosa. These linings are more sensitive to irritation, and there have been occasional reports of irritation, inflammation, burp-back, or a burning sensation following oral administration.[\[167\]](#),[\[168\]](#),[\[169\]](#),[\[170\]](#),[\[171\]](#) But these effects were usually

minor and were reversed when the irritating oil was eliminated.

Burp-back of essential oils is common and can be expected when taking them orally. Taking essential oils with food and at least eight ounces of water may reduce this effect.

It is suspected that larger doses are more likely to cause irritation. Studies demonstrate that lower doses protect the gastrointestinal system while larger doses of the same oil irritate it.[\[172\]](#),[\[173\]](#) It is also reasonable to presume that taking essential oils orally on an empty stomach will increase the risk of stomach irritation. However, the overwhelming body of scientific evidence suggests many essential oils are gastroprotective and even promote healing of irritated and inflamed tissues, even among essential oils commonly reported to irritate the stomach or gastrointestinal tract (thyme, oregano).[\[174\]](#),[\[175\]](#),[\[176\]](#),[\[177\]](#),[\[178\]](#),[\[179\]](#),[\[180\]](#),[\[181\]](#),[\[182\]](#) These studies suggest that the essential oils promote healing of these sensitive linings due to their ability to stimulate mucus production, reduce inflammation, destroy bacteria associated with ulcers and their antioxidant properties. Based on current knowledge, and the available literature, oral administration of essential oils does not pose a long-term risk of damage to the oral cavity, esophagus, stomach, or intestines when taken in reasonable dosages and with food. Some research supports this theory.

Essential Oils and Gastrointestinal Flora (Probiotics)

Some aromatherapists and websites suggest that antimicrobial essential oils kill harmful as well as beneficial intestinal flora similarly to antibiotic medications. However, essential oils are intelligent and intuitive, which suggests they may be able to selectively destroy harmful bacteria while leaving probiotics (good bacteria) intact.

A study that tested the inhibitory effects of sixty-six essential oils or essential oil compounds against pathogenic bacteria and two probiotic strains determined that essential oils could selectively inhibit harmful bacteria without harming probiotics.[\[183\]](#) Although the essential oils and compounds tested significantly inhibited harmful bacteria, they had little effect on the tested probiotics. Another study found that cinnamon, clove, and mint essential oils demonstrated some antimicrobial activity against the probiotic *L. rhamnosus* in yogurt, but the activity was minimal.[\[184\]](#) In fact, enough probiotics remained in the yogurt product that the product could still meet the minimum requirements to be considered a probiotic.

Other studies have determined that some essential oils may decrease the ability of probiotics to reproduce and destroy beneficial flora. Cinnamon oil concentrations damaged the cell membrane of *L. rhamnosus* and caused a significant reduction in the number of viable probiotics in one study.[\[185\]](#) Cassia essential oil, which is closely related to cinnamon essential oil, also inhibited some probiotics. Interestingly, the researchers discovered that cassia significantly inhibited some intestinal bacteria (*Bi. bifidum*, *B. fragilis*, and *Cl. perfringens*), but did not inhibit or only weakly inhibited the common probiotics *Bi. longum* and *L. acidophilus*.[\[186\]](#) Another study tested the antimicrobial activity of common basil (*O. americanum*) essential oil against two pathogenic organisms and the probiotic *L. casei*. This study also found that the essential oil demonstrated antimicrobial activity against all the organisms, but that *L. casei* was less susceptible to destruction by the essential oil.[\[187\]](#) Two additional studies found similar results with tea tree oil against *Lactobacillus spp*, suggesting probiotics are more resilient to destruction by essential oils than harmful pathogens.[\[188\]](#),[\[189\]](#)

Based on the available research, it appears that essential oils are intelligent and can distinguish between friendly and harmful bacteria to a certain degree. Nevertheless, considering the far-reaching benefits of probiotics, it is reasonable to supplement more heavily with probiotics four hours after ingesting antimicrobial essential oils. Clinical studies are lacking in this regard, but our current understanding of essential oils and probiotics suggests that they can live in harmony within the human body.

Liver Toxicity and Essential Oils: Fact or Fabricated Fiction?

Lipophilic (lipid- or fat-soluble) substances like essential oils swiftly enter the bloodstream and are processed by the liver, unlike hydrophilic (water-soluble) substances that are inclined to stay in the blood or are transported to aqueous compartments within the body. The fastest way to the liver is oral administration, at which point the liver distributes and eliminates the various essential oil compounds. The liver metabolizes essential oil compounds for elimination in two phases through a process called biotransformation. This process converts lipophilic (fat-soluble) substances to hydrophilic (water-soluble) substances, which are more easily excreted by the kidneys. Common phase I reactions include oxidation, reduction, and hydrolysis. The most common phase II reactions include glucuronidation, sulfation, and conjugation.

Topical, vaginal, and rectal administration of essential oils bypasses the first phase of biotransformation, but the essential oil compounds are eventually distributed to the liver for processing and elimination through the cytochrome P450 pathway. In addition, dermal (skin) enzymes can catalyze phase I and phase II reactions, though the reactions generally occur with less efficacy than within the liver.

It is important to note that metabolism chemically alters the original compound, making its metabolite possess different pharmacological and/or toxicological properties. Essential oils are naturally detoxifying; however, toxification is also possible—methyl eugenol is an example of a toxic essential oil compound. [\[190\]](#),[\[191\]](#) And if abundant quantities of essential oils are consumed, it is possible to overwhelm the body's detoxification system, potentially causing harm to the liver. It has been reported that the depletion of glutathione levels in the liver is an important mechanism of action for liver injury to occur. The liver contains the highest levels of reduced glutathione (GSH) in the body as a protective mechanism against reactive molecules produced in the liver during the normal detoxification and metabolism processes.

Excessive oral doses of essential oils could potentially deplete liver glutathione stores and overwhelm the liver, creating hepatotoxicity. This result seems to be rare and isolated to megadoses of a few essential oils. Aromatherapy texts often list hepatotoxic essential oils as cassia (coumarin), cinnamon (cinnamaldehyde), pennyroyal (pulegone), thyme (thymol), oregano (carvacrol), clove (eugenol), and fennel (anethole) because they contain compounds (in parenthesis) reported to reduce glutathione S-transferase activity and/or deplete liver glutathione levels and have been reported as hepatotoxic. Dosages that could potentially produce toxicity are frequently extreme—often exceeding 10 ml in a single dose for the average-size human adult (154 pounds). For instance, it required the administration of 67.5 mg/kg/day of coumarin (not cassia essential oil) to produce hepatotoxic effects in male baboons.[\[192\]](#) In other words, if this translated directly to humans, a 154-pound human would have to consume 4,725 mg (over 5 ml) daily to produce the same effect.

One study reporting the development of acute liver failure (ALF) in a 15-month-old who ingested 10 ml of clove oil concluded that a single dose of 10 ml of clove could cause hepatotoxicity.^[193] The ALF was reversed by administering N-acetylcysteine. Another young child—2 years old—ingested a single dose of 10 ml of clove oil, which resulted in liver toxicity and excessive clotting of the blood.^[194] These results are not surprising, given the amount ingested and the age of the children. So, in other words, the cases of liver toxicity that are sensationalized by those who oppose oral consumption of essential oils are from unreasonable doses, not what is typically used.

Oregano is often listed as toxic to the liver because it contains minute amounts of thymol. However, at least one study suggests that thymol protects the liver against toxicity by inhibiting lipid peroxidation—free-radical damage to the lipid cellular membrane, resulting in degradation of lipids ^[195]—and that another compound in oregano called carvacrol is hepatoprotective.^[196] So, oregano is naturally balanced by Mother Nature.

Another aspect to consider in the toxicity debate is the fact that many studies on toxicity focus on a single essential oil compound, not all of the compounds naturally found in the plant. This places the compounds out of balance with what Mother Nature produces and may eliminate many compounds that offer a balancing, buffering, or protective effect to a single compound. For example, high doses of anethole deplete glutathione, ^[197] but even though fennel essential oil contains anethole it significantly stimulates glutathione production and may protect the liver from oxidative damage.^{[198],[199]} This is because fennel contains buffering and balancing compounds found naturally in the essential oil, rather than just the one isolated nutrient.

Compromised Livers or Liver Damage and Essential Oils Use

If a person has a compromised liver, liver damage, or liver failure, then there is potential for essential oils to exacerbate this condition, particularly essential oils that are known to be hepatotoxic in larger doses. ^{[200], [201]} Even smaller doses of certain essential oils could potentially be harmful to a person with impaired liver function. Caution is warranted for both oral and topical administration of essential oils among those with liver disorders, particularly oral administration.

Oral Consumption is Reasonable, Beneficial, and Safe

Based on available data, it seems reasonable that essential oils are safe when administered orally in sensible doses (as opposed to the extreme dosages that cause toxicity) for a reasonable period. Those who advise against this practice want to treat essential oils more like drugs where only licensed professionals can dispense or administer them orally. These individuals also ignore the fact that essential oils contain dozens to hundreds of naturally occurring compounds, some of which act as buffers to balance or counteract the toxicity of other compounds. This is likely why, despite being extremely potent remedies, adverse reactions to essential oils are significantly lower and less severe than those of drugs. If reasonable dosages are followed and safety precautions observed, oral administration can be of great benefit.

RETENTION

Retention is a very efficient method to deliver essential oils to the lower colon and into the vagina. This method also bypasses the gastrointestinal system, avoiding breakdown of essential oils during digestion.

The mucous membranes of the colon and vagina are highly susceptible to irritation, so caution is advised with this method. Dilution ratios of 3% to 5% are recommended. Mix 12 to 21 drops of essential oil with 1 tablespoon of carrier oil and insert through the rectum, retain up to eight hours. For vaginal insertion, mix the same ratio and place the mixture on a tampon, then insert into vagina and retain up to eight hours, or replace three to four times daily. Be cautious with “hot” oils and this method, and try mild oils first. For a douche, add 3 to 8 drops of oil in one liter of water and douche twice daily.

Essential oils may also be inserted in the rectum or vagina in a capsule or by creating a suppository. For the capsule method, add up to 4 drops of essential oil to the capsule and fill the rest with carrier oil, and then insert as far up the rectum or vagina as possible.

To create an essential oil suppository, fill an ice cube tray (preferably one that makes small, round cubes) half full with coconut oil and then place in the freezer for two hours. After a couple of hours, remove the tray and add up to 10 drops of essential oil to each cube. Fill the tray the rest of the way with coconut oil and place in the freezer for another two hours. Once solid, the suppository can be inserted in the rectum or vagina.

Using the Protocols

The method (or methods) of application will depend on the severity of the condition and how accustomed you are to a particular oil or protocol. Using more than one method of application at a time can often exponentially increase the effectiveness of essential oil therapy. However, you can select just one application method to start if desired.

When more than one essential oil is indicated, you may apply them one at a time, waiting a few minutes between each oil for the previous one to absorb—called layering—or create a blend of the suggested oils and apply this blend all at once. It is convenient to create the mixture in a bottle and use the desired or suggested number of drops.

Unless otherwise recommended in the protocol it is expected that the suggested essential oils be diluted according to age, current state of health, and body size.

Recommended Essential Oils

While profiles for seventy-seven essential oils are included, the protocols will adhere to a smaller list of forty-two essential oils. These include balsam fir, basil, blue tansy, blue spruce, cedarwood, cinnamon bark, cistus, clary sage, clove, copaiba, cypress, eucalyptus, fennel, frankincense, geranium, German chamomile, ginger, goldenrod, grapefruit, helichrysum, juniper, lavender, lemon, lemongrass, lime, marjoram, melaleuca (tea tree), myrrh, myrtle, nutmeg, orange, oregano, peppermint, pine, rosemary, sandalwood, spruce, thyme, tsuga (Hemlock spruce), vetiver, wintergreen, and ylang ylang. This group of essential oils will allow you to manage most ailments you can expect to experience and still leave them manageable and reasonably easy to carry with you. However, you may substitute essential oils with similar properties or chemical compounds as necessary.

It is critical that you have a supply of essential oils on hand to be prepared before you find yourself in a situation where you need it. If you know you have a specific health condition, it is wise to have an

abundant supply of the oil, or oils, recommended for that condition.

ESSENTIAL OIL PROFILES

The following essential oils profiles can be used as a guide to determine the constituent profile of a therapeutic essential oil based on the available research, the potential therapeutic uses, cautions, recommended dilution ratios, and more. It is always recommended that you ask for a GC-MS analysis of the oils that you purchase to ensure that you are getting a pure and therapeutic oil. In addition, this will help identify chemotypes of essential oils, which can be very different in compound profile, and are used for different purposes and have different cautions.

The primary compounds generally make up 5% or more of the essential oil, while the other compounds can be found in the oil from 0.1% to 9.9%. When multiple chemotypes or distillation types exist, the compounds that make up less than 5% of the essential oil may be provided to help determine the chemotype. Bold therapeutic properties are those that the essential oil is often a preferred choice for.

FAMILY: Identifies the family the plant belongs to.

NOTE: Identifies how volatile the essential oil is and how long the aroma may last.

AROMA: Describes the odor of the essential oil.

AROMA INTENSITY: Describes how intense/strong the odor is.

COMMON EXTRACTION METHOD: Identifies the part(s) of the plant commonly used to obtain the essential oil.

BLENDS WELL WITH: Lists other essential oils that the essential oil is commonly blended with or may blend well with.

POSSIBLE SUBSTITUTE OILS: Lists essential oils that could possibly be used as a substitute if the recommended oil is not available based on compound profile and/or reported properties.

RECOMMENDED DILUTION RANGE: Suggests a range for diluting the essential oil for topical application.

PRIMARY COMPOUNDS: Identifies the compounds that are commonly reported in the essential oil based on the published research/studies/GC-MS reports. Those that are usually found in quantities of 5% or greater are included, while those found in quantities of 4.9% or less are usually listed to identify chemotype or distillation type.

OTHER COMPOUNDS: Lists compounds that are usually found in the essential oil in the range of 0.5% to 4.9%.

REPORTED THERAPEUTIC PROPERTIES: Lists the therapeutic properties based on traditional uses, known protocols, empirical evidence, and scientific research.

CAUTIONS: Identifies known cautions with the essential oil, in regards to drug interactions, and contraindications for children, pregnancy and lactation, and certain health conditions.

SELECTED EVIDENCE: Shares in vitro, in vivo, animal, and clinical studies that suggest a therapeutic or beneficial quality of the oil.



BALSAM FIR (Fir Needle)

Abies balsamea

FAMILY: Pinaceae

NOTE: Middle

AROMA INTENSITY: Strong

AROMA: Fresh, piney, balsamic, warm, woody

COMMON EXTRACTION METHOD: Steam distillation of the needles

POSSIBLE SUBSTITUTE OILS: Silver fir, white fir, pine, cedarwood, blue spruce, spruce (black)

BLENDS WELL WITH: Birch, blue spruce, cassia, cedarwood, cypress, galbanum, German chamomile, frankincense, lavender, lemon, myrtle, palo santo, pine, silver fir, spruce (black), tsuga, white fir

RECOMMENDED DILUTION RANGE: 5%–Neat

PRIMARY COMPOUNDS: [\[202\]](#), [\[203\]](#), [\[204\]](#), [\[205\]](#), [\[206\]](#), [\[207\]](#)

Beta-Pinene 27.3%–38.0%

Delta-3-Carene 0.0%–27.7%

Alpha-Pinene 6.2%–25.8%

Beta-Phellandrene 4.4%–23.1%

Bornyl Acetate 4.9%–17.6%

Limonene 1.8%–15.6%

Camphene 3.5%–9.7%

OTHER COMPOUNDS: Beta-myrcene, d-limonene, terpinolene, alpha-terpineol, santene

REPORTED THERAPEUTIC PROPERTIES: **Anti-inflammatory**, antirheumatic, immune-supportive, **respiratory supportive**, removes excess mucous, **decongestant**, analgesic (pain relief), **relieves bone pain**, antibacterial, anticancer, antioxidant, **antimicrobial**, antifungal, antispasmodic, **supportive of endocrine and thyroid function**, eases cough, wound healing, anxiolytic (reduces anxiety),

relaxing, grounding, warming, emotionally stabilizing, uplifting, corrects negative emotions, **aids concentration and meditation**

CAUTIONS:

- May weakly interfere with the enzymes responsible for metabolizing medications (NSAIDs, proton-pump inhibitors, acetaminophen, antiepileptics, immune modulators, blood-sugar medications, blood pressure medications, antidepressants, antipsychotics, diabetic medications, antihistamines, antibiotics, and anesthetics).[\[208\]](#)

SELECTED EVIDENCE:

- Components of balsam fir actively inhibit the gram-positive bacterium *Staphylococcus aureus*.[\[209\]](#)
 - Balsam fir essential oil helps kill some cancer cells (breast, prostate, lung, colorectal, and melanoma).[\[210\]](#)
-



BASIL (Sweet, Linalool CT)

Ocimum basilicum

FAMILY: Lamiaceae (Labiatae)

NOTE: Middle-Top

AROMA INTENSITY: Strong

AROMA: Herbal, spicy, sharp, licorice-like

COMMON EXTRACTION METHOD: Steam distillation of the leaves

POSSIBLE SUBSTITUTE OILS: Black pepper, thyme (linalool and geraniol CT), marjoram, lavandin, lavender

BLENDS WELL WITH: Balsam fir, bergamot, black spruce, blue spruce, camphor, copaiba, cypress,

eucalyptus, fennel, geranium, lavender, lemongrass, lime, marjoram, neroli, pine, rosemary

RECOMMENDED DILUTION RANGE: 3%–20%; neat for some conditions

PRIMARY COMPOUNDS: [\[211\]](#), [\[212\]](#)

Linalool CT

Linalool	45.3%–69.3%
Epi-Alpha-Cadinol	3.4%–13.1%
Eugenol	4.7%–11.2%
Alpha-Bergamotene	2.6%–11.2%
Terpinen-4-ol	0.0%–5.4%
1,8-Cineole	0.2%–5.0%
Germacrene D	0.8%–3.3%

OTHER COMPOUNDS: Myrcene, limonene, (E)-beta-ocimene, allo-ocimene, alpha-terpineol, nerol, bornyl acetate, neryl acetate, geranyl acetate, beta-caryophyllene, alpha-amorphene, elemol, viridiflorol, gamma-eudesmol, geraniol, alpha-bulnesene, cubenol, spathulenol, phytol, camphor, borneol

REPORTED THERAPEUTIC PROPERTIES: **Analgesic (pain relief)**, **antispasmodic**, antibacterial, antiviral, antineuralgic, wound healing, **relieves insect bites and stings**, decongestant, diuretic, anti-inflammatory, antioxidant, anticancer, **muscle relaxer**, nervine (calms and soothes the nerves), improves skin luster, supports adrenal function, **aids digestion, eases cough (especially spasmodic coughs)**, supports normal respiration, aids circulation, **headache (migraine)**, soothes nausea, expels excess gas, **eases earache**, improves muscle tone, relaxing, warming, **mentally stimulating**, stress management, **relieves anxiety**, encourages self-confidence and motivation, aids mental clarity, reduces burnout and confusion

CAUTIONS:

- May interfere with enzymes responsible for metabolizing medications (NSAIDs, proton-pump inhibitors, acetaminophen, antiepileptics, immune modulators, blood-sugar medications, blood pressure medications, antidepressants, antipsychotics, diabetic medications, antihistamines, antibiotics, and anesthetics). [\[213\]](#), [\[214\]](#)
- May interact with aspirin, blood pressure, antiplatelet, and anticoagulant medications, and increase the risk of bleeding among people with bleeding disorders. [\[215\]](#)
- May inhibit MAO enzymes and increase the risk of hypertension, tremors, confusion, muscle twitching, irritable mood, and diarrhea (methyl chavicol CT). [\[216\]](#)
- May interact with diabetic medications and cause hypoglycemia. [\[217\]](#)
- Do not take the estragole CT orally due to very high methyl chavicol (estragole) content—up to 86%, [\[218\]](#) which is a known animal carcinogen. [\[219\]](#), [\[220\]](#) The methyl chavicol (estragole) CT should also be avoided by all methods of administration by children through age 5, and during pregnancy and nursing.

SELECTED EVIDENCE:

- Sweet basil showed significant activity in preventing the spread of glioblastoma cells. [\[221\]](#)

Glioblastomas are tumors that occur in the star-shaped cells in the supportive tissue of the brain called astrocytes.

- Sweet basil may help prevent the spread of human oral and mouse leukemia cancer cells.[\[222\]](#)
 - A twice-per-week thirty-minute aromatherapy massage with orange, geranium, and basil helped relieve depression.[\[223\]](#) The authors speculate that this antidepressant activity was achieved by increasing blood flow to the prefrontal cortex (the front part of the brain responsible for regulating behavior).
 - A topical mixture of sweet basil (3%) and orange (5%) essential oils and acetic acid was tested against acne in seven volunteers. The antiseptic and keratolytic (the softening and peeling of the horny outer layer of skin) activity of the mixture improved the acne in 75% of the volunteers.[\[224\]](#)
 - An animal model of fibromyalgia suggests that the oral administration of 25 mg/kg of sweet basil oil or linalool significantly reduces pain and increased Fos protein expression (an indication of modified neuronal activity pathways in the central nervous system, particularly the pain pathway).[\[225\]](#),[\[226\]](#) Increased Fos expression from the central nervous system (spinal cord) triggers a cascade of events that produces chronic pain.[\[227\]](#) The studies observed that the pain-relieving effect lasted much longer when the oil or linalool was combined with beta-cyclodextrin (a chemical that causes an enzymatic reaction that makes the oil more water-soluble and bioavailable).
 - Animal research suggests that sweet basil helps reduce pain by influencing prostaglandins and prostacyclins.[\[228\]](#)
 - Inhalation of a combination of peppermint, basil, and helichrysum oils reduced mental exhaustion and moderate burnout in a small pilot study.[\[229\]](#)
 - Sweet basil may protect DNA from damage and mutation due to its antioxidant properties.[\[230\]](#)
 - Animal research suggests that sweet basil protects the myocardium against damage during a heart attack.[\[231\]](#)
 - Animal research suggests that sweet basil may significantly alleviate acute ear infections.[\[232\]](#)
 - Sweet basil actively inhibits gram-negative and gram-positive bacterium, drug-resistant bacteria, fungi, and parasites (including *giardia lamblia*).[\[233\]](#),[\[234\]](#),[\[235\]](#),[\[236\]](#),[\[237\]](#)
 - An animal study concluded that a combination of lavender, monarda, and basil oils reduces cholesterol in the aorta and adverse effects by accumulation of atherosclerotic plaques in the aorta.[\[238\]](#)
 - Sweet basil is up to 100% effective against dust mites and helps kill the larvae of mosquitos that carry malaria.[\[239\]](#),[\[240\]](#)
 - An increase in fingertip skin temperature and sensory experience has been observed in a clinical study where participants inhaled sweet basil.[\[241\]](#)
-



BAY LAUREL (Laurel Leaf, Bay Leaf, Sweet Bay)

Laurus nobilis

FAMILY: Lauraceae

NOTE: Top-Middle

AROMA INTENSITY: Strong

AROMA: Medicinal, herbaceous, spicy

COMMON EXTRACTION METHOD: Steam distillation of the leaves and twigs

POSSIBLE SUBSTITUTE OILS: Eucalyptus, cajeput, cardamom, ravintsara (1,8-cineole CT), ravensara (1,8-cineole CT), niaouli (1,8-cineole CT)

BLENDS WELL WITH: Bergamot, cedarwood, clary sage, coriander, cypress, eucalyptus, fennel, frankincense, geranium, ginger, juniper, lavender, lemon, orange, patchouli, pine, neroli, rose, rosemary, thyme, ylang ylang

RECOMMENDED DILUTION RANGE: 5%–20%; 50% for some conditions

PRIMARY COMPOUNDS: [\[242\]](#), [\[243\]](#), [\[244\]](#), [\[245\]](#), [\[246\]](#), [\[247\]](#)

1,8-Cineole	18.8%–68.8%
Linalool	0.4%–17.7%
Methyl Eugenol	0.1%–15.8%
Alpha-Terpinyl Acetate	0.0%–14.6%
Isovaleraldehyde	0.0%–10.5%
Beta-Phellandrene	0.0%–10.5%
Sabinene	0.1%–10.2%
Camphene	0.2%–8.9%
Alpha-Pinene	1.9%–7.7%
Beta-Pinene	1.4%–4.7%

OTHER COMPOUNDS: Terpinen-4-ol, limonene, myrcenol, para-cymene, o-cymene, alpha-terpinene, gamma-terpinene, alpha-terpinolene, endo-bornyl acetate, pinocarvone, 1,4-terpineole, trans-pinocarveol, eugenol, eremophilene, ledene, 2-naphthalenemethanol, linalyl acetate, alpha-terpineol, camphor

REPORTED THERAPEUTIC PROPERTIES: **Analgesic (pain relief)**, anti-inflammatory, anesthetic, antibacterial, **antimicrobial**, antifungal, antirheumatic, antiseptic, anticancer, antispasmodic, antineuralgic, **stimulates lymph flow**, reduces fever, **expels excess mucous**, decongestant, promotes the discharge of bile, reduces inflamed glands, expels excess gas, stimulates the appetite, diuretic, sedating, warming, aids focus and concentration, **enhances confidence**, reduces mental confusion

CAUTIONS:

- Avoid with children under age 3, particularly around the nose and mouth. Use very cautiously in children under age 5 due to high 1,8-cineole content. 1,8-cineole may cause seizures, central nervous system problems, or respiratory distress in young children.[\[248\]](#),[\[249\]](#),[\[250\]](#)
- Use very cautiously during pregnancy and lactation due to potentially high methyl eugenol content. Very large doses of methyl eugenol may adversely affect the mother's liver and infant body weight according to animal research.[\[251\]](#)
- Do not take orally due to high methyl eugenol content. Methyl eugenol is considered an animal carcinogen and a possible human carcinogen.[\[252\]](#)
- May interact with blood pressure medications based on a study with an ethanolic extract of bay laurel.[\[253\]](#)
- Avoid with epilepsy and Parkinson's disease due to 1,8-cineole content. May exacerbate or cause seizures or convulsions based on 1,8-cineole content, although an animal study suggests that it may prevent seizure.[\[254\]](#),[\[255\]](#),[\[256\]](#),[\[257\]](#),[\[257a\]](#)
- Bay laurel may cause motor impairment according to animal studies. You should not drive or operate machinery while using.[\[258\]](#)
- May interfere with pentobarbital and other barbiturates (medications for anxiety and insomnia) based on 1,8-cineole content.[\[259\]](#),[\[260\]](#)
- May be mildly photosensitizing (bay laurel absolute only). Avoid sun exposure to area of application for at least twelve hours after topical application.[\[261\]](#)

SELECTED EVIDENCE:

- Bay laurel may prevent the spread of myeloid leukemia and breast cancer cells according to *in vitro* research.[\[262\]](#),[\[263\]](#) Other research has found that it may help destroy leukemia, melanoma, and kidney cancer cells.[\[264\]](#),[\[265\]](#)
- Animal research suggests that bay laurel provides analgesic and anti-inflammatory effects comparable to the drugs morphine and piroxicam.[\[266\]](#)
- Inhaling bay laurel may improve careful concentration and attention to task performance (something critical to reading, writing, learning, and social behavior).[\[267\]](#)
- Bay laurel significantly inhibits the acetylcholinesterase enzyme from breaking down acetylcholine.[\[268\]](#) This activity may benefit a number of neurological disorders including Alzheimer's disease, myasthenia gravis, Lewy body dementia, and schizophrenia.
- Bay laurel effectively inhibits the common bacterium *S. aureus*, *Enterococcus faecalis*, *S.*

epidermidis, *E. coli*, *L. monocytogenes*, *S. typhimurium*, and *Pseudomonas aeruginosa*.[\[269\]](#)
[\[270\]](#) It is also active against the SARS-coronavirus (SARS-CoV).[\[271\]](#)



BERGAMOT

Citrus bergamia Risso, *Citrus aurantium* subsp. *bergamia* Risso & Poit

FAMILY: Rutaceae (Citrus)

NOTE: Top

AROMA INTENSITY: Medium

AROMA: Citrusy, fruity, fresh, sweet

COMMON EXTRACTION METHOD: Cold-pressed/expressed or hydrodistilled from the fruit peel (rind)

POSSIBLE SUBSTITUTE OILS: Neroli, lime, lemon, grapefruit

BLENDS WELL WITH: Bay leaf, balsam fir, black pepper, cardamom, carrot seed, cassia, coriander, cedarwood, chamomile (Roman, German), camphor, cypress, clary sage, fennel, frankincense, geranium, helichrysum, lavender, lemon, lemon verbena, lime, neroli, niaouli, nutmeg, palmarosa, petitgrain, ravensara, sage, Spanish sage, vetiver, ylang ylang

RECOMMENDED DILUTION RANGE: 5%–50%; neat for some conditions

PRIMARY COMPOUNDS:[\[272\]](#),[\[273\]](#),[\[274\]](#),[\[275\]](#)

Cold-pressed/expressed

Limonene 10.5%–53.2%

Linalyl Acetate 15.6%–40.5%

Linalool 1.8%–20.3%

Beta-Pinene 0.1%–12.1%

Gamma-Terpinene 4.3%–11.4%

Distilled

Limonene	31.7%–59.2%
Linalool	9.5%–31.8%
Linalyl Acetate	10.7%–16.8%
Gamma-Terpinene	0.1%–10.3%
Beta-Pinene	0.8%–4.4%

OTHER COMPOUNDS: *Cold-pressed/expressed*— Alpha-pinene, beta-myrcene, beta-pinene, sabinene, beta-bisabolene, neryl acetate, alpha-bergamotene, terpinolene, neral, geranial, trans-caryophyllene, valencene, bergamottin; *Distilled*—Alpha-pinene, myrcene, alpha-terpineol, geraniol, geranyl acetate, alpha-bergamotene, beta-bisabolene

REPORTED THERAPEUTIC PROPERTIES: Stimulates hormone release, antibacterial, disinfectant, analgesic (pain relief), anti-inflammatory, **aids digestion**, reduces appearance of blemishes, **supports endothelial and cardiovascular function**, reduces fever, anticancer, antiparasitic, antispasmodic, wound healing, **relieves sore throat**, **antiseptic**, encourages a restful night's sleep, evens skin tone, decongestant, **antidepressant**, relaxing, sedating, uplifting, helps release suppressed negative emotions, **relieves anxiety**, combats aggression, reduces insecurity, despondency, and loneliness, reduces mood swings

CAUTIONS:

- Very photosensitizing, do not expose skin to UV rays for up to twenty-four hours following topical application.[\[276\]](#)[\[277\]](#) It is best to apply photosensitizing oils to places where they will not be exposed to UV rays.
- May interfere with the enzymes responsible for drug metabolism (NSAIDs, proton-pump inhibitors, acetaminophen, antiepileptics, immune modulators, blood-sugar medications, blood pressure medications, antidepressants, antipsychotics, diabetic medications, antihistamines, antibiotics, and anesthetics).[\[278\]](#)

SELECTED EVIDENCE:

- Bergamot may enhance autophagy (the body's housekeeping process to remove cellular waste and pathogens, and maintain balanced sources of energy).[\[279\]](#)
- Two of the major components of bergamot, limonene and linalyl acetate, are reported to play leading roles in bergamot's ability to trigger neuroblastoma cancer-cell death.[\[280\]](#) Bergamot may prevent the spread and promote the death of neuroblastomas.[\[281\]](#)[\[282\]](#)[\[283\]](#)
- Bergamot influences calcium ion activity and endothelial inflammation to promote relaxation of the blood vessel walls (vasorelaxation), which may decrease blood pressure.[\[284\]](#)[\[285\]](#)[\[286\]](#)[\[287\]](#) Another study found that inhaling lavender, ylang ylang, and bergamot oils once daily for four weeks reduced cortisol levels, psychological stress, and blood pressure in people with essential hypertension.[\[288\]](#)
- Bergamot may help reduce skin inflammation and therefore chronic inflammatory conditions of the skin.[\[289\]](#)
- Bergamot may prevent the spread of melanoma cancer cells.[\[290\]](#)
- *In vitro* research suggests that bergamot inhibits several mycoplasmas (bacteria that lack a cell

wall, which makes them resistant to several common antibiotics) including *M. hominis*, *M. pneumoniae*, and *M. fermentans*.[\[291\]](#)

- Bergamot profoundly influences the nervous system to help reduce anxiety, correct mild mood disorders, protect against brain injury/damage, and reduce pain (including pain caused by something that normally would not cause pain).[\[292\]](#),[\[293\]](#),[\[294\]](#),[\[295\]](#),[\[296\]](#),[\[297\]](#)
- Inhalation of bergamot may reduce stress, depression, negative emotions, anxiety, and fatigue.[\[298\]](#),[\[299\]](#),[\[300\]](#),[\[301\]](#)
- *In vitro* research suggests that bergamot oil inhibits acetylcholinesterase (AChE) and butyrylcholinesterase (BChE) enzyme activity.[\[302\]](#) Inhibition of AChE prevents the breakdown of acetylcholine, which is essential for memory and thinking. People with neurodegenerative diseases make less acetylcholine, and the diseases often break it down at a faster rate leading to acetylcholine deficits. Selective inhibition of BChE is also desirable in neurodegenerative diseases because it interferes with acetylcholine activity. In addition, BChE is often found in the plaques and tangles in the brains of people with Alzheimer's disease.[\[303\]](#)
- Animal research suggests that bergamot reduces the hypothalamic-pituitary-adrenal axis (HPA) response to stress by reducing corticosterone release, which makes it a valuable remedy for anxiety and stress management.[\[304\]](#)
- A hand massage with equal parts of frankincense, bergamot, and lavender (as a 1.5% dilution with sweet almond carrier oil) reduced the pain and depression of hospice patients with terminal cancer.[\[305\]](#)
- *In vitro* research suggests that the vapors of a combination of bergamot and orange oils inhibit the growth of drug-resistant and drug-sensitive strains of *E. faecalis* and *E. faecium*.[\[306\]](#) Another study determined that bergamot and orange oil kill and inhibit the growth of these bacteria by affecting the cell membrane and cell homeostasis.[\[307\]](#)



Image Credit: Milosz_G/Shutterstock

BIRCH (Sweet Birch, Black Birch, Cherry Birch)

Betula lenta, *Betula carpinifolia*

FAMILY: Betulaceae

NOTE: Top

AROMA INTENSITY: Strong

AROMA: Intense, balsamic, sweet, fresh

COMMON EXTRACTION METHOD: Steam distillation of the bark

POSSIBLE SUBSTITUTE OILS: Wintergreen

BLENDS WELL WITH: Balsam fir, basil, bergamot, blue spruce, cajeput, cedarwood, chamomile (German, Roman), copaiba, frankincense, juniper, lavender, lemon, lemongrass, marjoram, myrtle, peppermint, pine, rosemary, sandalwood, silver fir, spruce (black), tsuga, white fir, wintergreen

RECOMMENDED DILUTION RANGE: 1.5%–20%; 50% for some conditions

PRIMARY COMPOUNDS: [\[308\]](#), [\[309\]](#)

Methyl Salicylate 97.0%–99.0%

OTHER COMPOUNDS: Ethyl-salicylate, linalyl acetate

REPORTED THERAPEUTIC PROPERTIES: **Analgesic (pain relief)**, **anti-inflammatory**, **anti-rheumatic**, antispasmodic, astringent, expels excess gas, **diuretic**, antiseptic, astringent, circulatory stimulant, promotes perspiration, reduces fever, antimicrobial, purifies the blood, aids detoxification, aids digestion, antidepressant, stimulating

CAUTIONS:

- Avoid with children under age 12. The high salicylate content in birch may increase the risk of a very serious and life-threatening illness called Reye syndrome in children under 12. Reye syndrome is sudden brain damage and liver dysfunction that most commonly occurs in children ages 4 to 12. It has an unknown cause, but it has been seen in children who were given aspirin when they had chicken pox or flu. [\[310\]](#)
- Do not use during pregnancy or lactation. May cause congenital abnormalities and fetal malformations. [\[311\]](#), [\[312\]](#)
- Oral caution—As little as 2.5 ml can cause toxicity and 4 ml may be fatal in children. As little as 5 ml could result in methyl salicylate poisoning in adults, and more than 5 ml can be fatal. [\[313\]](#), [\[314\]](#), [\[315\]](#), [\[316\]](#), [\[317\]](#) Do not exceed 5 drops per day orally for an adult.
- Avoid with epilepsy and Parkinson's disease due to methyl salicylate content. [\[318\]](#), [\[319\]](#)
- May interact with aspirin, blood pressure, antiplatelet, and anticoagulant medications, and increase the risk of bleeding among people with bleeding disorders both topically and orally. [\[320\]](#), [\[321\]](#), [\[322\]](#), [\[323\]](#)
- Toxicity may occur with overuse topically and the absorption of methyl salicylate increases with repeated applications. [\[324\]](#) Not intended for long-term use.
- Avoid orally with gastroesophageal reflux disease (GERD). May cause accumulation of fluid in the larynx (laryngeal edema) and lead to airway obstruction in sensitive individuals. [\[325\]](#)
- Avoid in individuals allergic to aspirin, methyl salicylate, or other NSAIDs. Methyl salicylate may be metabolized to the known NSAID, salicylic acid, by the liver. [\[325a\]](#)

SELECTED EVIDENCE:

- Birch oil showed strong antifungal activity against four fungi (*Cephalosporium aphidicola*, *Drechslera sorokinianse*, *Fusarium solani*, and *Rhizoctonia cerealis*).[\[326\]](#)
-



BLACK PEPPER

Piper nigrum

FAMILY: Anacardiaceae

NOTE: Top-Middle

AROMA INTENSITY: Medium

AROMA: Spicy, warming, stimulating

COMMON EXTRACTION METHOD: Steam distillation of the dried fruit

POSSIBLE SUBSTITUTE OILS: Copaiba, basil (Linalool CT), thyme (Thuyanol-4 CT)

BLENDS WELL WITH: Basil, cardamom, cassia, clove, coriander, frankincense, lavender, lemon, marjoram, nutmeg, palo santo, patchouli, pine, ravensara, rosemary, sandalwood, ylang ylang

RECOMMENDED DILUTION RANGE: 5%–20%; 50% for some conditions

PRIMARY COMPOUNDS: [\[327\]](#), [\[328\]](#), [\[329\]](#), [\[330\]](#)

Beta-Caryophyllene	1.4%–70.4%
Eugenol	0.1%–41.0%
Limonene	2.9%–38.4%
Delta-3-Carene	1.7%–32.6%
Beta-Pinene	0.7%–25.6%
Sabinene	0.0%–19.2%
Alpha-Pinene	0.3%–16.7%
Terinen-4-ol	0.0%–13.2%

Germacrene D	0.0%–11.0%
Beta-Eudesmol	0.0%–9.7%
Hedycaryol	0.0%–9.1%
Alpha-Phellandrene	0.0%–8.6%
Caryophyllene Oxide	0.1%–7.2%
Beta-Phellandrene	0.0%–3.2%

OTHER COMPOUNDS: 1-naphthalenol, beta-myrcene, cyclohexene, naphthalene, naphthalene, (+)-4-carene, beta-humulene, beta-cymene, alpha-thujene, linalool, para-cymene, gamma-terpinene, delta-elemene, alpha-copaene, beta-elemene, alpha-gurjunene, beta-alanine, amorphan-3en-9-ol, trans-nerolidol, delta-cadinene, spathulenol

REPORTED THERAPEUTIC PROPERTIES: Analgesic (pain relief), anti-inflammatory, **aids digestion**, enhances stomach acid production, weight management, protects skin from UV damage, encourages production of skin pigment, **aids circulation**, decongestant, expectorant, antibacterial, **smoking cessation**, antioxidant, antiviral, improves nutrient absorption, aids cognition and memory, increases glutathione and superoxide dismutase production, helps repair gastrointestinal tract damage, respiratory stimulant, helps reduce fear, reduces fatigue and low energy, fosters courage

CAUTIONS:

- May interfere with the enzymes responsible for drug metabolism (NSAIDs, proton-pump inhibitors, acetaminophen, antiepileptics, immune modulators, blood-sugar medications, blood pressure medications, antidepressants, antipsychotics, diabetic medications, antihistamines, antibiotics, and anesthetics).[\[331\]](#)

SELECTED EVIDENCE:

- Black pepper exhibits strong antioxidant properties and inhibits the activity of key enzymes (alpha-amylase, alpha-glucosidase, and angiotension-1 converting) involved in type-2 diabetes and high blood pressure.[\[332\]](#) This activity may help prevent and/or manage type-2 diabetes and high blood pressure.
- Inhalation of pepper essential oil increases sympathetic nervous system activity and adrenaline levels, which suggests it may improve alertness.[\[333\]](#)
- Inhalation of black pepper significantly decreases nicotine cravings among smokers.[\[334\]](#)[\[335\]](#)[\[336\]](#)
- Topical application of black pepper essential oil prior to intravenous (IV) insertion improves vein visibility and ease of IV insertion.[\[337\]](#)
- A combination of marjoram, black pepper, lavender, and peppermint applied topically decreases neck pain and improves range of motion in people with a history of neck pain.[\[338\]](#)
- Inhalation of black pepper may improve reflexive swallowing movement and may benefit those who have trouble swallowing regardless of consciousness, physical, and mental status.[\[339\]](#)
- Black pepper oil may significantly prevent DNA from bonding to a cancer-causing chemicals (DNA adduct formation) and therefore help prevent cancer.[\[340\]](#)
- Animal research suggests oral administration of black pepper essential oil significantly increases superoxide dismutase, glutathione, and glutathione reductase enzyme levels, reduces

- acute inflammation, and helps relieve pain.[\[341\]](#)
- o Black pepper helps prevent the growth of several bacteria.[\[342\]](#)
-



BLUE CYPRESS

Callitris intratropica

FAMILY: Cupressaceae

NOTE: Top-Middle

AROMA INTENSITY: Medium

AROMA: Fresh, balsamic, woody, fruity

COMMON EXTRACTION METHOD: Steam distilled from the wood or leaves

POSSIBLE SUBSTITUTE OILS: Blue tansy, German chamomile, frankincense

BLENDS WELL WITH: Cedarwood, eucalyptus, orange, rosemary, sandalwood

RECOMMENDED DILUTION RANGE: 5%–Neat

PRIMARY COMPOUNDS: [\[343\]](#), [\[344\]](#), [\[345\]](#)

Leaves

Alpha-pinene	35.9%–55.6%
Limonene	21.6%–50.5%
Myrcene	6.0%–10.1%

Wood

Bulnesol (5-Azulenemethanol)	13.8%–18.0%
Guaiol	13.7%–15.3%
Beta-Eudesmol	8.5%–14.0%
Dihydrocolumellarin	1.3%–14.0%

Alpha-Eudesmol	7.6%–11.2%
Gamma-Eudesmol	8.0%–9.7%
Guaiazulene	0.1%–6.2%
Chamazulene	0.0%–5.6%

OTHER COMPOUNDS: Alpha-selinene, beta-chamigrene, beta-elemene, beta-selinene, beta-guaiene, elemol, callitrisin, cadalene

REPORTED THERAPEUTIC PROPERTIES: Analgesic, anti-inflammatory, antibacterial, antifungal, antiviral, anti-infectious, antiallergenic, relieves itching and skin conditions, **supports respiratory function**, wound healing, calming, helps remove pessimism, grounding, **inspires confidence**

CAUTIONS:

- Avoid during pregnancy and lactation due to beta-eudesmol content. Beta-eudesmol strongly inhibits the growth of new blood vessels, which is necessary for implantation, and placental and embryonic development.[\[346\]](#)
- May interact with blood pressure medications and increase their blood pressure lowering effects based on beta-eudesmol content.[\[347\]](#)

SELECTED EVIDENCE:

- Blue cypress may support a normal inflammatory response by suppressing the production of pro-inflammatory prostaglandins and moderately inhibiting the 5-lipoxygenase (5-LOX) enzyme that is involved in the inflammation process.[\[348\]](#),[\[349\]](#)
 - Blue cypress may mildly inhibit MRSA.[\[350\]](#)
-



BLUE SPRUCE (Colorado Blue Spruce, Colorado Spruce)

Picea pungens

FAMILY: Pinaceae

NOTE: Middle

AROMA INTENSITY: Medium

AROMA: Woody, evergreen, earthy

COMMON EXTRACTION METHOD: Steam distilled from the needles

POSSIBLE SUBSTITUTE OILS: Spruce (black), tsuga, silver fir, rosemary (Bornyl acetate CT), balsam fir, white fir

BLENDS WELL WITH: Balsam fir, birch, black spruce, cedarwood, chamomile (German, Roman), copaiba, frankincense, galbanum, lavender, lemon, myrtle, palo santo, pine, silver fir, tsuga, white fir

RECOMMENDED DILUTION RANGE: 5%–Neat

PRIMARY COMPOUNDS: [\[351\]](#), [\[352\]](#), [\[353\]](#)

Bornyl Acetate 6.7%–29.4%

Camphor 0.0%–26.4%

Limonene 0.0%–24.8%

Alpha-Pinene 4.1%–23.8%

Camphene 7.1%–18.0%

Beta-Pinene 0.0%–8.8%

Myrcene 5.1%–7.5%

Delta-3-Carene 0.0%–6.4%

OTHER COMPOUNDS: 1,8-cineole, alpha-terpinolene, beta-elemene, bicyclo[3.1.0]hexan-2-ol, exo-methylcamphenillol, gamma-cadinene, linalool, germacrene D, 3-cyclohexene-1-methanol, borneol, 2-cyclohexene-1-one

REPORTED THERAPEUTIC PROPERTIES: Antioxidant, **stimulates androgenic hormone production**, analgesic (pain relief), **nervine (calms and soothes the nerves)**, antineuralgic, antiseptic, anti-inflammatory, supports the respiratory system, antibacterial, grounding, relaxing, **releases past trauma and emotional blocks**

CAUTIONS:

- Use very cautiously with children under 6 due to potentially high camphor content. Several cases of camphor poisoning and/or seizures from ingestion and topical application have been reported in children.[\[354\]](#),[\[355\]](#) Ingestion of camphor-containing products has been lethal in children under age 2.[\[356\]](#) Children 5 years and up may use camphor-containing essential oils topically in dilutions no stronger than 5%.
- Caution is warranted during pregnancy and while lactating due to potentially high camphor content. Ingestion of essential oils with significant levels of camphor may lead to abortion because fetuses lack the enzymes to process it.[\[357\]](#) Camphor ingestion by infants and young children may cause cough, vomiting, seizure, burning sensation in the mucous membranes and eyes, or lack of voluntary coordination of muscle movements.[\[358\]](#)
- Avoid with epilepsy and Parkinson's due to potentially high camphor content.[\[359\]](#),[\[360\]](#),[\[361\]](#)
- Oral—Essential oils with significant levels of camphor can be toxic when taken orally. Camphor can be toxic when taken orally (usually single doses exceeding 2 ml), although the lethal dose for humans is estimated to be more than 5 ml in a single dose.[\[362\]](#),[\[363\]](#),[\[364\]](#),[\[365\]](#),[\[366\]](#),[\[367\]](#),[\[368\]](#),[\[369\]](#),[\[370\]](#)
- Avoid with those who have a compromised liver due to the risk of increased liver enzymes and liver damage.[\[371\]](#)
- The potentially high camphor content in blue spruce may negatively impact red blood cells and increase the risk of jaundice in children with Glucose-6-phosphate dehydrogenase deficiency (G6PD).[\[372\]](#),[\[373\]](#)

SELECTED EVIDENCE:

- Topical application of blue spruce may increase total and free-testosterone levels an average of 9% and 26.8% respectively.[\[374\]](#)
 - Bornyl acetate reduces proinflammatory cytokine levels and may reduce pain and inflammation.[\[375\]](#),[\[376\]](#)
-



BLUE TANSY (Moroccan Tansy, Moroccan Blue Chamomile)

Tanacetum annuum

FAMILY: Asteraceae (Compositae)

NOTE: Middle

AROMA INTENSITY: Medium

AROMA: Warm, sweet, soft, herbaceous

COMMON EXTRACTION METHOD: Steam distilled from the aerial parts of the flowering plants

POSSIBLE SUBSTITUTE OILS: Blue cypress, German chamomile, ravensara (sabinene CT), cistus, helichrysum

BLENDS WELL WITH: Bergamot, cedarwood, eucalyptus, geranium, helichrysum, lavender, neroli, patchouli, pine, rose

RECOMMENDED DILUTION RANGE: 5%–Neat

PRIMARY COMPOUNDS: [\[377\]](#), [\[378\]](#), [\[379\]](#), [\[380\]](#)

Chamazulene CT

Chamazulene	17.0%–38.0%
Beta-Myrcene	1.0%–18.4%
Camphor	4.0%–18.0%
Sabinene	4.0%–8.6%
Beta-Eudesmol	3.0%–7.0%

Sabinene CT

Sabinene	13.3%–22.3%
Myrcene	4.4%–18.3%
Camphor	11.7%–13.2%
Beta-Pinene	5.3%–10.1%

Alpha-Phellandrene	7.1%–9.2%
Para-Cymene	5.9%–8.9%
Chamazulene	2.8%–5.0%
Alpha-Pinene	2.1%–4.9%

OTHER COMPOUNDS: *Chamazulene CT*—Beta-pinene, alpha-bisabolol, borneol, camphene, beta-caryophyllene, caryophyllene oxide, 1,8-cineole, para-cymene, dehydro-5,6,7,8-tetrahydrochazulene, 3,6-dihydrochamazulene, 5,6-dihydrochamazulene, beta-elemene, elemol, beta-farnesene, limonene, terpinen-4-ol, alpha-terpinene, gamma-terpinene, alpha-terpineol, thymol; *Sabinene CT*—Camphene, limonene, alpha-terpinene, beta-phellandrene, gamma-terpinene, thymol, beta-caryophyllene, 1,8-cineole, borneol, 3,6-dihydrochamazulene, borneol, 5,6-dihydrochamazulene, farnesene isomer, germacrene D, terpinen-4-ol, beta-eudesmol

REPORTED THERAPEUTIC PROPERTIES: Antiallergenic, **wound healing**, **anti-inflammatory**, analgesic (pain relief), antibacterial, antifungal, antiviral, antioxidant, antispasmodic, **nourishes skin**, stimulates immune function, reduces excess mucous, **supports tissue regeneration**, reduces anxiety, relaxing, sedating, stress management, reduces anger

CAUTIONS:

- May interfere (low risk) with the enzymes responsible for drug metabolism (NSAIDs, proton-pump inhibitors, acetaminophen, antiepileptics, immune modulators, blood-sugar medications, blood pressure medications, antidepressants, antipsychotics, diabetic medications, antihistamines, antibiotics, and anesthetics).[\[381\]](#)
- The potentially high camphor content in blue tansy may negatively impact red blood cells and increase the risk of jaundice in children with Glucose-6-phosphate dehydrogenase deficiency (G6PD).[\[382\]](#),[\[383\]](#)
- Avoid with epilepsy and Parkinson's disease due to camphor content (moderate risk). May exacerbate or cause seizures or convulsions based on camphor content.[\[384\]](#),[\[385\]](#)

SELECTED EVIDENCE:

- Blue tansy helps decrease inflammation by mildly inhibiting the 5-lipoxygenase (5-LOX) enzyme that is involved in the inflammation response according to *in vitro* research.[\[386\]](#)
 - Blue tansy inhibits the growth of common food fungi, including *Botrytis cinerea*, *Helminthosporium oryzae*, *Alternaria solani*, *Piricularia oryzae*, and *Verticillium dahliae*.[\[387\]](#)
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CAJEPUT (Cajuput)

Melaleuca leucadendron, *Melaleuca cajuputi*, *Melaleuca leucadendron* var. *cajuputi*

FAMILY: Myrtaceae

NOTE: Middle

AROMA INTENSITY: Medium

AROMA: Medicinal, penetrating, slightly sweet, slightly woody

COMMON EXTRACTION METHOD: Steam distilled from the leaves and twigs

POSSIBLE SUBSTITUTE OILS: Eucalyptus, niaouli (1,8-cineole CT), ravintsara (1,8-cineole CT), ravensara (1,8-cineole CT), cardamom, rosemary (1,8-cineole CT)

BLENDS WELL WITH: Birch, clove, clary sage, eucalyptus, juniper, lavender, marjoram, melaleuca (tea tree), neroli, patchouli, peppermint, pine, rosemary, spearmint, wintergreen, ylang ylang

RECOMMENDED DILUTION RANGE: 5%–50%; neat for some conditions

PRIMARY COMPOUNDS: [\[388\]](#), [\[389\]](#), [\[390\]](#), [\[391\]](#)

(Indonesian, Vietnamese)

1,8-Cineole	44.8%–60.2%
Alpha-Terpineol	5.9%–12.5%
Limonene	4.5%–8.9%
Beta-Caryophyllene	3.8%–7.6%

OTHER COMPOUNDS: (Indonesian, Vietnamese)—Alpha-pinene, beta-pinene, beta-myrcene, alpha-thujene, limonene, carene, gamma-terpinene, terpinolene, terpinen-4-ol, gamma-terpineol, cedrene, humulene, beta-eudesmene, patchoulene, germacrene D, globulol, cubenol, eugenol, 2-pentanone

REPORTED THERAPEUTIC PROPERTIES: Analgesic (pain relief), anti-inflammatory, antiseptic, **antiviral**, antifungal, **antispasmodic**, **antibacterial**, antimicrobial, **antineuralgic**, astringent, balances

menstruation, aids digestion, **supports respiratory health**, expels excess gas, reduces fever, brightens skin, reduces the appearance of blemishes, wound healing, protects against radiation, aids circulation, **eases cough**, decongestant, expels excess mucous, supports liver function, **relieves earache**, antiparasitic, warming, stimulating, reduces fatigue, combats mental confusion

CAUTIONS:

- Avoid with children under age 3, particularly around the nose and mouth. Use very cautiously in children under age 5 due to high 1,8-cineole content. 1,8-cineole may cause seizures, central nervous system problems, or respiratory distress in young children.[\[392\]](#),[\[393\]](#),[\[394\]](#)
- Avoid with epilepsy and Parkinson's disease due to 1,8-cineole content. May exacerbate or cause seizures or convulsions based on 1,8-cineole content.[\[395\]](#),[\[396\]](#)[\[396a\]](#)
- Caution is warranted orally due to the significant amounts of 1,8-cineole. Limit it to small doses internally (adults—maximum 10 drops daily). Toxicity has been reported when eucalyptus (also high in 1,8-cineole) was ingested in large doses, and as few as 4 to 5 drops may cause problems in very sensitive individuals.[\[397\]](#),[\[398\]](#),[\[399\]](#),[\[400\]](#),[\[401\]](#),[\[402\]](#)
- May interfere with enzymes that metabolize medications (NSAIDs, proton-pump inhibitors, acetaminophen, antiepileptics, immune modulators, blood-sugar medications, blood pressure medications, antidepressants, antipsychotics, diabetic medications, antihistamines, antibiotics, and anesthetics).[\[403\]](#),[\[404\]](#)
- May interfere with pentobarbital and other barbiturates (medications for anxiety and insomnia) based on 1,8-cineole content.[\[405\]](#),[\[406\]](#)

SELECTED EVIDENCE:

- Cajeput inhibits the herpes simplex virus type 1 (HSV-1).[\[407\]](#)
 - Cajeput inhibits several microorganisms, including *A. baumannii*, *A. veronii*, *C. albicans*, *E. faecalis*, *E. coli*, *K. pneumoniae*, *P. aeruginosa*, *S. enterica*, *S. marcescens*, and *S. aureus*.[\[408\]](#)
 - *In vitro* research suggests that cajeput essential oil is a potent antioxidant and free-radical scavenger.[\[409\]](#)
 - Cajeput repels disease-carrying mosquitoes.[\[410\]](#),[\[411\]](#)
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Image Credit: Oleggenko/Shutterstock

CAMPHOR (Hon-Sho, True Camphor)

Cinnamomum camphora, *Laurus camphora*

FAMILY: Lauraceae

NOTE: Top

AROMA INTENSITY: Strong

AROMA: Fresh, medicinal, intense, woody

COMMON EXTRACTION METHOD: Steam distilled from the wood, branches, leaves and flowers

POSSIBLE SUBSTITUTE OILS: Ravintsara (camphor CT), sage (camphor CT), rosemary (camphor CT), basil (linalool CT), lavandin, Spanish sage

BLENDS WELL WITH: chamomile (German, Roman), copaiba, eucalyptus, frankincense, juniper, lavandin, peppermint, pine, rosemary, wintergreen

RECOMMENDED DILUTION RANGE: 1.5%–20%; 50% for some conditions

PRIMARY COMPOUNDS: [\[412\]](#), [\[413\]](#), [\[414\]](#), [\[415\]](#), [\[416\]](#), [\[417\]](#), [\[418\]](#)

Camphor CT

Camphor	36.5%–98.0%
Linalool	0.6%–22.3%
1,8-Cineole	1.0%–12.0%
Camphene	0.2%–11.7%
Limonene	0.0%–9.0%
Sabinene	0.2%–6.3%
Beta-Pinene	0.0%–6.3%
Terpinen-4-ol	0.0%–6.3%
Alpha-Pinene	2.0%–4.7%

Linalool CT (Leaves, flowers, stems)

Linalool	40.3%–87.3%
Camphor	0.7%–33.5%
Beta-Caryophyllene	1.5%–5.5%
Eugenol	0.0%–3.6%
1,8-Cineole	0.1%–3.0%
Beta-Selinene	0.5%–2.9%

OTHER COMPOUNDS: *Camphor CT*—Myrcene, para-cymene, myrtenol, borneol, alpha-terpineol, myrtenal, caryophyllene oxide; *Linalool CT*—Alpha-pinene, alpha-terpineol, geraniol, safrole, methyl eugenol (< 0.8%), sabinene, beta-myrcene, alpha-terpinolene, gamma-murolene, germacrene D, delta-cadinene, 1-epi-cubenol, alpha-cadinol, gamma-elemene, alpha-humulene, alpha-caryophyllene, safrole

REPORTED THERAPEUTIC PROPERTIES: Analgesic (pain relief), anti-inflammatory, antiseptic, antispasmodic, **antiviral**, **antibacterial**, antimicrobial, anticancer, diuretic, expectorant, **stimulates the heart**, antiparasitic, enhances the penetration of other essential oils, increases sweating and redness of the skin, respiratory stimulant, antirheumatic, reduces appearance of skin blemishes, **eases cough**, stimulating

CAUTIONS:

- Avoid with children under 6 due to high camphor content. Several cases of camphor poisoning and/or seizures from ingestion and topical application have been reported in children.[\[419\]](#),[\[420\]](#) Ingestion of camphor-containing products has been lethal in children under age 2.[\[421\]](#) Children 5 years and up may use camphor topically in dilutions no stronger than 5%. 1,8-cineole may cause seizures, central nervous system problems, or respiratory distress in young children.[\[422\]](#),[\[423\]](#),[\[424\]](#)
- Caution is warranted during pregnancy and while lactating. Camphor ingestion may lead to abortion because fetuses lack the enzymes to process it.[\[425\]](#) Camphor ingestion by infants and young children may cause cough, vomiting, seizure, burning sensation in the mucous membranes and eyes, or lack of voluntary coordination of muscle movements.[\[426\]](#)
- Avoid with epilepsy and Parkinson's disease due to camphor content.[\[427\]](#),[\[428\]](#),[\[429\]](#)
- Oral—Camphor can be toxic when taken orally (usually single doses exceeding 2 ml), although the lethal dose for humans is estimated to be (more than 5 ml) in a single dose.[\[430\]](#),[\[431\]](#),[\[432\]](#)
- The potentially high camphor content in camphor may negatively impact red blood cells and increase the risk of jaundice in children with Glucose-6-phosphate dehydrogenase deficiency (G6PD).[\[433\]](#),[\[434\]](#)
- Avoid with those who have a compromised liver due to the risk of increased liver enzymes and liver damage.[\[435\]](#) This would also suggest that those taking medications that could cause liver damage should also use camphor very cautiously or avoid it.
- Caution is warranted for the topical application of camphor on broken or injured skin due to an increased risk of toxicity.[\[436\]](#)

SELECTED EVIDENCE:

- Camphor influences cytokine, nitric oxide, and prostaglandin production to exert an anti-inflammatory effect.[\[437\]](#)
 - Camphor enhances the penetration of other substances through the skin.[\[438\]](#)
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Image Credit: Nanka/Shutterstock

CARDAMOM

Elettaria cardamomum

FAMILY: Zingiberaceae

NOTE: Middle

AROMA INTENSITY: Strong

AROMA: Warm, spicy, slightly balsamic

COMMON EXTRACTION METHOD: Steam distilled from the seeds

POSSIBLE SUBSTITUTE OILS: Eucalyptus, niaouli (1,8-cineole CT), ravintsara (1,8-cineole CT), ravensara (1,8-cineole CT), cajeput, rosemary (1,8-cineole CT), bay laurel, neroli, basil (Linalool CT)

BLENDS WELL WITH: Bergamot, black pepper, cinnamon, clove, cedarwood, fennel, ginger, grapefruit, lemon, lemongrass, neroli, orange, patchouli, rose, sandalwood, tangerine, vetiver, ylang ylang

RECOMMENDED DILUTION RANGE: 3%–33%; neat for some conditions

PRIMARY COMPOUNDS: [\[439\]](#), [\[440\]](#), [\[441\]](#), [\[442\]](#), [\[443\]](#)

1,8-Cineole CT

1,8-Cineole 15.9%–55.6%

Alpha-Terpinyl Acetate 0.9%–35.3%

Linalool 0.6%–6.4%

Alpha-Terpinyl-Acetate CT

Alpha-Terpinyl Acetate 10.2%–68.2%

1,8-Cineole 4.3%–27.2%

Linalool 0.0%–10.2%

Nerolidol	0.3%–8.9%
Alpha-Terpineol	2.1%–7.4%
Nerol	0.0%–6.8%
Sabinene	2.6%–4.3%

OTHER COMPOUNDS: *1,8-Cineole*—Cis-ocimene, alpha-pinene, sabinene, myrcene, gamma-terpinene, terpinolene, fenchyl alcohol, alpha-selinene, farnesol, linalyl acetate, terpinen-4-ol, geranyl acetate, geraniol, nerolidol; *Alpha-Terpinyl Acetate CT*—Alpha-pinene, alpha-myrcene, 4-terpineol, geranyl acetate

REPORTED THERAPEUTIC PROPERTIES: Antiseptic, antispasmodic, antimicrobial, **expels excess gas, aids digestion**, enhances metabolism, relieves insect bites, stimulates the release of hormones, diuretic, relieves constipation, **stimulates appetite**, anticancer, nervine (calms and soothes the nerves), stimulating, warming, stress management, **aids concentration and focus**, helps relieve overwhelming feelings, aphrodisiac, reduces shame and guilt, combats frustration

CAUTIONS:

- Avoid with children under age 3 (1,8-cineole CT), particularly around the nose and mouth. Use very cautiously in children under age 5 due to high 1,8-cineole content. 1,8-cineole may cause seizures, central nervous system problems, or respiratory distress in young children.[\[444\]](#),[\[445\]](#),[\[446\]](#)
- Avoid with epilepsy and Parkinson’s disease due to 1,8-cineole content. May exacerbate or cause seizures or convulsions based on 1,8-cineole content.[\[447\]](#),[\[448\]](#),[\[448a\]](#)
- Caution is warranted orally due to the significant amounts of 1,8-cineole (1,8-cineole CT). Limit to small doses internally (adults—maximum 10 drops daily). Toxicity has been reported when eucalyptus (also high in 1,8-cineole) was ingested in large doses, and as few as 4 to 5 drops may cause problems in very sensitive individuals.[\[449\]](#),[\[450\]](#),[\[451\]](#),[\[452\]](#),[\[453\]](#),[\[454\]](#)
- May interfere with enzymes responsible for metabolizing medications (NSAIDs, proton-pump inhibitors, acetaminophen, antiepileptics, immune modulators, blood-sugar medications, blood-pressure medications, antidepressants, antipsychotics, diabetic medications, antihistamines, antibiotics, and anesthetics).[\[455\]](#)
- May interfere with pentobarbital and other barbiturates (medications for anxiety and insomnia) based on 1,8-cineole content.[\[456\]](#),[\[457\]](#)

SELECTED EVIDENCE:

- Cardamom may help prevent tumor formation at the molecular level.[\[458\]](#),[\[459\]](#)
- Extracts of cardamom demonstrated better protection against stomach ulcers than Zantac (ranitidine) in animals.[\[460\]](#) It also protects against aspirin-caused stomach lesions.[\[461\]](#)
- Cardamom oil may significantly prevent DNA from bonding to a cancer-causing chemicals (DNA adduct formation) and therefore help prevent cancer.[\[462\]](#)
- A marked anti-inflammatory and antispasmodic effect has been observed in animals administered cardamom.[\[463\]](#)
- Cardamom demonstrates antimicrobial activity against *Staphylococcus aureus*, *Bacillus cereus*, *Escherichia coli*, and *Salmonella typhi*.[\[464\]](#)
- *Extracts of cardamom may help destroy microbes associated with dental cavities.*[\[465\]](#)



CARROT SEED

Daucus carota

FAMILY: Apiaceae (Umbelliferae)

NOTE: Middle

AROMA INTENSITY: Medium

AROMA: Slightly sweet, earthy, woody

COMMON EXTRACTION METHOD: Steam distilled from the seeds

POSSIBLE SUBSTITUTE OILS: Cistus, rose

BLENDS WELL WITH: Bergamot, cedarwood, cinnamon, fennel, geranium, ginger, lavender, lemon, lime, melaleuca (tea tree), orange, neroli, patchouli, tangerine

RECOMMENDED DILUTION RANGE: 5%–Neat

PRIMARY COMPOUNDS: [\[466\]](#), [\[467\]](#)

Carotol	38.9%–66.8%
Daucol	2.0%–12.6%
Beta-Caryophyllene	0.0%–10.7%
Daucene	0.0%–8.7%
Alpha-Farnesene	0.2%–5.9%
Caryophyllene Oxide	0.0%–4.3%
Beta-Farnesene	0.5%–4.0%

OTHER COMPOUNDS: Camphene, alpha-pinene, sabinene, myrcene, limonene, terpinolene, beta-pinene, linalool, n-no, trans-pinocarveol, trans-verbenol, para-cymen-8-ol, alpha-terpineol, verbenone, carvone, cis-alpha-bergamotene, germacrene D, ar-curcumene, beta-selinene, bicyclogermacrene, beta-bisabolene, Z-gamma-bisabolene, beta-sesquiphellandrene, 15-copaenol, alpha-eudesmol, alpha-cadinol

REPORTED THERAPEUTIC PROPERTIES: Promotes cellular regeneration, antioxidant, aids detoxification, aids circulation, **nourishes skin, reduces the appearance of blemishes and wrinkles,**

antiparasitic, antiseptic, expels excess gas, diuretic, supports liver function, strengthens nails, supports hair strength, stimulating, antidepressant, reduces anxiety, combats mood swings

CAUTIONS:

- Avoid during pregnancy and lactation. Animal studies suggest very large doses of carrot seed oil blocks progesterone synthesis and prevents implantation of the fertilized egg into the uterine wall. [\[468\]](#), [\[469\]](#), [\[470\]](#)

SELECTED EVIDENCE:

- The main ingredient in carrot seed essential oil, carotol, inhibits the growth of multidrug-resistant fungi. [\[471\]](#)



CASSIA (Chinese Cinnamon)

Cinnamomum cassia, *Cinnamomum aromaticum*

FAMILY: Lauraceae

NOTE: Middle

AROMA INTENSITY: Strong

AROMA: Spicy, warm, potent, slightly woody

COMMON EXTRACTION METHOD: Steam distilled from the leaves or bark

POSSIBLE SUBSTITUTE OILS: Cinnamon

BLENDS WELL WITH: Balsam fir, bergamot, black pepper, chamomile (Roman, German), coriander, frankincense, ginger, geranium, grapefruit, lavender, lemon, lime, neroli, nutmeg, orange, petitgrain, rosemary, silver fir, tangerine, white fir

RECOMMENDED DILUTION RANGE: 1.5%–20%

PRIMARY COMPOUNDS: [\[472\]](#), [\[473\]](#), [\[474\]](#), [\[475\]](#), [\[476\]](#), [\[477\]](#), [\[478\]](#), [\[479\]](#)

Bark

(E)-Cinnamaldehyde	24.6%–92.3%
Cis-2-Methoxy Cinnamic Acid	0.0%–43.1%
2-Methoxycinnamaldehyde	0.0%–13.2%
(Z)-Cinnamaldehyde	4.4%–10.5%
Acetophenone	0.0%–6.9%
(E)-Cinnamic Acid	0.0%–5.5%
Cinnamyl Acetate	0.0%–4.2%

Leaves

(E)-Cinnamaldehyde	57.9%–78.4%
Cinnamyl Acetate	0.0%–9.2%
Eugenol	0.0%–4.5%
Alpha-Terpineol	0.0%–4.2%

OTHER COMPOUNDS: *Bark*—Alpha-pinene, benzaldehyde, beta-phellandrene, benzenepropanal, borneol, alpha-terpineol, coumaran, hydrocinnamic alcohol, bornyl acetate, (E)-cinnamyl acetate, (E)-cinnamyl alcohol, citronellol acetate, alpha-ylangene, coumarin, chamigrene, alpha-curcumene, caryophyllene oxide, beta-naphthalenedione, ethanone; *Leaves*—Beta-terpineol, gamma terpineol, trans-caryophyllene, benzaldehyde, benzyl benzoate, salicylaldehyde, coumarin, alpha-copaene, phenylpropanal, anisaldehyde

REPORTED THERAPEUTIC PROPERTIES: Analgesic (pain relief), antirheumatic, antiarthritic, antispasmodic, **antimicrobial**, antibacterial, **antiviral**, astringent, expels excess gas, aids circulation, **antiparasitic**, eases nausea, enhances libido, **relieves diarrhea**, eases cough, aids digestions, **supports normal blood-sugar levels**, energizing, stimulating, antidepressant

CAUTIONS:

- Avoid during pregnancy and lactation. Several studies have tested the major compounds of cinnamon and cassia essential oils with pregnant animals, and the results have been inconsistent. Therefore, it is advised to avoid essential oils with significant quantities of cinnamaldehyde during pregnancy until further research is conclusive.[\[480\]](#),[\[481\]](#),[\[482\]](#)
- May interact with aspirin, blood pressure, antiplatelet, and anticoagulant medications, and increase the risk of bleeding among people with bleeding disorders.[\[483\]](#),[\[484\]](#),[\[485\]](#)
- May interfere with enzymes responsible for metabolizing medications (NSAIDs, proton-pump inhibitors, acetaminophen, antiepileptics, immune modulators, blood-sugar medications, blood pressure medications, antidepressants, antipsychotics, diabetic medications, antihistamines, antibiotics, and anesthetics).[\[486\]](#),[\[487\]](#)
- May interact with diabetes medications and cause low blood-sugar levels.[\[488\]](#),[\[489\]](#),[\[490\]](#)
- May interact with antibiotics and possibly enhance their effects.[\[491\]](#),[\[492\]](#)
- May irritate mucous membranes (eyes, mouth, nasal passages, vagina, rectum).

SELECTED EVIDENCE:

- Cassia inhibits proinflammatory molecules (nitric oxide synthase, COX-2, prostaglandins) and also activates anti-inflammatory molecules (cytokines IL-10, transforming growth factor-beta). [\[493\]](#)
 - Cinnamaldehyde strongly inhibits multidrug-resistant bacteria, molds, and dermatophytes (fungi that require keratin for growth and infect the skin, hair, and nails). [\[494\]](#), [\[495\]](#)
 - Cassia degrades the integrity of the membranes of pathogenic bacteria to cause their destruction. [\[496\]](#)
 - Cassia decreases blood-glucose levels and stimulates pancreas beta-cells to produce insulin in animals (slightly better than true cinnamon bark). [\[497\]](#) Other research suggests that it reduces fasting blood-sugar levels up to 29%. [\[498\]](#)
 - Inhalation of cinnamaldehyde significantly increased survivability among mice infected with the influenza A virus. [\[499\]](#) Cinnamaldehyde also inhibited virus growth in vitro.
 - Cassia, or its main compound cinnamaldehyde, may reduce the production of melanin and whiten the skin. [\[500\]](#)
 - Animal and *in vitro* research concluded that cinnamaldehyde inhibits influenza A/PR/8 growth if administered within three hours after infection. [\[501\]](#) The same research also found that inhalation of 50 mg and administration of 250 mcg through the nasal of cinnamaldehyde per day reduced virus spread and increased survivability in mice.
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CEDARWOOD

Cedrus atlantica, *Cedrus deodara*

FAMILY: Pinaceae

NOTE: Base-Middle

AROMA INTENSITY: Strong

AROMA: Woody, balsamic, rich, earthy

COMMON EXTRACTION METHOD: Steam distilled from the wood or needles

POSSIBLE SUBSTITUTE OILS: *C. atlantica*—Frankincense, cypress, sandalwood, cistus; *C. deodara*—Sandalwood, frankincense; *J. virginiana*—sandalwood, cypress

BLENDS WELL WITH: Bay laurel, balsam fir, bergamot, blue cypress, blue spruce, carrot seed, cinnamon, copaiba, cypress, myrtle, jasmine, juniper, lemon, neroli, palmarosa, patchouli, petitgrain, pine, rose, rosemary, ravensara, sandalwood, Spanish sage, silver fir, spruce, thyme, tsuga, vetiver, white fir

RECOMMENDED DILUTION RANGE: 5%–Neat

PRIMARY COMPOUNDS: [\[502\]](#), [\[503\]](#), [\[504\]](#), [\[505\]](#), [\[506\]](#), [\[507\]](#), [\[508\]](#), [\[509\]](#), [\[510\]](#), [\[511\]](#), [\[512\]](#)

Cedrus atlantica, wood (Atlas cedarwood)

Alpha-pinene	14.9%–79.4%
Himachalol	5.3%–66.2%
Beta-Himachalene	9.9%–40.4%
Cis-Alpha-Atlantone	5.2%–29.5%
Beta-Pinene	2.4%–21.4%
Alpha-Himachalene	4.2%–16.4%
Gamma-Himachalene	5.1%–11.0%

Cedrus deodara, needles (Himalayan cedarwood)

Alpha-Terpineol	30.2%
Linalool	24.5%
Limonene	17.0%
Anethole	14.6%

Cedrus deodara, wood (Himalayan cedarwood)

Beta-Himachalene	12.3%–38.3%
Alpha-Himachalene	10.4%–30.8%
Himachalol	12.1%–18.2%
Alpha-Cedrene	0.0%–15.8%
Beta-Himachalene Oxide	0.0%–14.9%
Gamma-Himachalene	7.0%–12.6%
Gamma-Atlantone	6.0%–8.6%

Juniperus virginiana, wood (Virginian cedarwood, Eastern red cedar)

Family: Cupressaceae (Coniferae)

Cedrol	4.0%–38.8%
Alpha-Cedrene	4.0%–35.0%
Thujopsene	14.6%–30.1%
Beta-Cedrene	2.0%–8.9%
Cuparene	0.0%–6.3%
Widdrol	1.0%–5.6%

OTHER COMPOUNDS: *Cedrus atlantica*—Alpha-terpinene, alpha-cubebene, cis-ocimene, humulene, beta-caryophyllene, delta-himachalene, cadinene, isocaryophyllene, germacrene D, beta-copaene, cymene, 3-carene, verbenol, limonene, ylangene, beta-phellandrene, gamma-amorphane, terpinen-4-ol; *Cedrus deodara*—Himachalene isomer, alpha-bisabolene, sesquiterpenol MW=222, allo-himachalol, epoxy sesquiterpene component, benzocycloheptenone isomer MW=178, alpha-atlantone, atlantone isomer, beta-atlantone, turmerone isomer MW=218, cedrol, ar-himachalene, limona ketone, 5-epi-aristolochene, allo-aromadendra-4(15), 10(14)-diene, longifolene; *Juniperus virginiana*—Alpha-pinene, beta-chamigrene, beta-himachalene, cedrene isomer, curcumene isomer, elemene isomer, cedrenol isomer

REPORTED THERAPEUTIC PROPERTIES: Antifungal, antiseptic, aphrodisiac, anti-inflammatory, astringent, diuretic, **expectorant**, regenerative, sedating, **encourages a restful night's sleep**, antispasmodic, circulatory stimulant, antirheumatic, calms cough, **reduces the appearance of blemishes**, slows hair loss, **stress management**, grounding, **reduces anxiety**, fear, and insecurity

CAUTIONS:

- None currently known.

SELECTED EVIDENCE:

- Atlas cedarwood prevents the spread of myeloid leukemia cells.[\[513\]](#)
 - Atlas cedarwood supports a normal inflammatory response by moderately inhibiting the 5-LOX enzyme *in vitro*.[\[514\]](#)
 - Himalayan cedarwood has demonstrated the ability to reduce stomach acid volume, create a more alkaline stomach environment, reduce stomach lining inflammation, and protect against stomach ulcers in animals.[\[515\]](#)
 - By balancing mast cell (cells that regulate immune system function through the release of chemical mediators like histamine, interleukins, proteoglycans, and enzymes) activity and inhibiting the production of leukotrienes, Himalayan cedar may reduce inflammation, allergic diseases (asthma, eczema, etc.), autoimmune disorders (rheumatoid arthritis, multiple sclerosis, etc.), and reproductive disorders (endometriosis, decreased sperm motility).[\[516\]](#)
 - Animal research suggests that oral administration of Himalayan cedarwood helps relieve pain and inflammation.[\[517\]](#),[\[518\]](#) Himalayan cedarwood is a stronger anti-inflammatory and 5-LOX inhibitor than Atlas cedarwood (strongly inhibits 5-LOX).[\[519\]](#)
 - Oral administration of cedarwood oil may modulate the immune response (both humoral and cell-mediated responses).[\[520\]](#)
 - A daily scalp massage with thyme, rosemary, lavender, and cedarwood oils in a mixture of carrier oils (jojoba and grapeseed) improved alopecia areata (round patches of hair loss) in 44% of study participants.[\[521\]](#)
 - Virginian cedarwood (*J. virginiana*) effectively repels fire ants and kills ticks, making it a possible natural insect repellent.[\[522\]](#)
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CINNAMON BARK (Ceylon Cinnamon, True Cinnamon)

Cinnamomum verum, *Cinnamomum zeylanicum*

FAMILY: Lauraceae

NOTE: Middle

AROMA INTENSITY: Strong

AROMA: Spicy, warm

COMMON EXTRACTION METHOD: Steam distilled from the dried inner bark

POSSIBLE SUBSTITUTE OILS: Cassia

BLENDS WELL WITH: Black pepper, carrot seed, clove, coriander, eucalyptus, geranium, juniper, lavender, pine, melaleuca (tea tree), nutmeg, orange, patchouli, rosemary, Spanish sage, turmeric, vetiver

RECOMMENDED DILUTION RANGE: 1.5%–20%

PRIMARY COMPOUNDS: [\[523\]](#), [\[524\]](#), [\[525\]](#), [\[526\]](#), [\[527\]](#), [\[528\]](#)

(E)-Cinnamaldehyde 50.5%–91.0%

Benzyl Benzoate 0.3%–15.1%

Beta-Caryophyllene 0.7%–10.4%

Eugenol 1.9%–10.0%

Benzaldehyde 0.6%–9.9%

Cinnamyl Acetate 0.1%–8.8%

Methyl Isoeugenol 0.0%–7.8%

Linalool 0.0%–6.3%

1,8-Cineole 0.0%–4.6%

OTHER COMPOUNDS: Camphene, alpha-phellandrene, para-cymene, limonene, benzyl alcohol, (Z)-cinnamaldehyde, benzenepropanol, carvone, linalyl acetate

REPORTED THERAPEUTIC PROPERTIES: Aids brain function, **supports balanced blood-sugar levels**, purifies the blood, aids circulation, analgesic (pain relief), **antiviral**, antiseptic, antibacterial, **anti-infectious**, **antimicrobial**, **antiparasitic**, **aids digestion**, relieves PMS and cramps, reduces bruises, helps remove warts, enhances metabolism, relieves sore throat, helps with morale and courage, grounding, uplifting

CAUTIONS:

- Avoid during pregnancy and lactation. Several studies have tested the major compounds of cinnamon and cassia essential oils with pregnant animals, and the results have been inconsistent. Therefore, it is advised to avoid essential oils with significant quantities of cinnamaldehyde during pregnancy until further research is conclusive.[\[529\]](#),[\[530\]](#),[\[531\]](#)
- May interact with aspirin, blood pressure, antiplatelet, and anticoagulant medications, and increase the risk of bleeding among people with bleeding disorders.[\[532\]](#),[\[533\]](#),[\[534\]](#)
- May interfere with enzymes responsible for metabolizing medications (NSAIDs, proton-pump inhibitors, acetaminophen, antiepileptics, immune modulators, blood-sugar medications, blood pressure medications, antidepressants, antipsychotics, diabetic medications, antihistamines, antibiotics, and anesthetics).[\[535\]](#),[\[536\]](#)
- May interact with diabetes medications and cause low blood-sugar levels.[\[537\]](#),[\[538\]](#),[\[539\]](#)
- May interact with antibiotics and possibly enhance their effects..[\[540\]](#),[\[541\]](#)
- May irritate mucous membranes (eyes, mouth, nasal passages, vagina, rectum).
- Minute amounts of camphor may be present in cinnamon bark (usually only in root oil), which may increase the risk of jaundice in children with G6PD (low risk).[\[542\]](#)

SELECTED EVIDENCE:

- Cinnamaldehyde is a strong inhibitor of multidrug-resistant bacteria, molds, and dermatophytes (fungi that require keratin for growth and infect the skin, hair, and nails).[\[543\]](#),[\[544\]](#) Cinnamon bark is a potent inhibitor of both gram-positive and gram-negative bacterium that belong to the *Staphylococcus*, *Enterococcus*, *Enterobacter*, and *Acinetobacter* families, and the fungi *Candida albicans*.[\[545\]](#),[\[546\]](#),[\[547\]](#)
- Researchers concluded that cinnamon oil inhibited several *Candida* species and bacterium known to cause hospital-acquired infections according to *in vitro* research.[\[548\]](#)
- Cinnamon bark decreases blood glucose levels and stimulates pancreas beta-cells to produce insulin in animals.[\[549\]](#) Other research concluded that cinnamon bark essential oil improves glucose tolerance, stimulates pancreas function, lowers blood-sugar levels, reduces triglycerides, and increases HDL cholesterol.[\[550\]](#),[\[551\]](#)
- Cinnamon bark essential oil effectively killed prostate, lung, and breast cancer cells *in vitro*.[\[552\]](#)
- Inhalation of cinnamaldehyde significantly increased survivability among mice infected with influenza A virus.[\[553\]](#) Cinnamaldehyde also inhibited virus growth *in vitro*.
- The main compound in cinnamon bark, cinnamaldehyde, may reduce the production of melanin and whiten the skin.[\[554\]](#)
- Cinnamon bark may increase sperm motility and quality according to animal research.[\[555\]](#)
- A foot bath (107° F water) with salts and either oregano, thyme, cinnamon bark, lemongrass, clove, palmarosa, peppermint, lavender, or geranium significantly reduced fungi associated with athlete's foot *in vitro*.[\[556\]](#)

- Cinnamon oil increased the effectiveness of gentamicin (an antibiotic drug) against multi-drug-resistant *Acinetobacter* species *in vitro*.[\[557\]](#)
 - Animal research suggests that cinnamon bark oil may protect the kidneys from damage associated with diabetes and uncontrolled high blood sugar.[\[558\]](#)
 - Cinnamon bark essential oil enhances the effectiveness of clindamycin (an antibiotic used to treat serious bacterial infections) against *C. difficile* when used together.[\[559\]](#)
 - *In vitro* research suggests that cinnamon oil, whether alone or in combination with peppermint, marjoram, lemon, and nutmeg, strongly inhibits the bacterium *Brucella abortus*, which is a cause of brucellosis (a disease spread from animal to people that cause fever, joint pain, muscle aches, and fatigue).[\[560\]](#)
 - The vapor of cinnamon bark oil inhibited both penicillin-susceptible and penicillin-resistant respiratory pathogens (*H. influenzae*, *S. pneumoniae*, *S. pyogenes*, and *S. aureus*) *in vitro*.[\[561\]](#)
 - Of 21 essential oils tested, cinnamon was the most effective inhibitor of *S. aureus*, *B. subtilis*, *K. pneumoniae*, *P. vulgaris*, *P. aeruginosa*, and *E. coli*.[\[562\]](#)
 - Peppermint, thyme, cinnamon, and lemongrass oils inhibited the respiratory tract pathogens *S. pyogenes* (a bacteria that causes strep throat, scarlet fever, impetigo, cellulitis, and tonsillitis) and *S. pneumoniae*.[\[563\]](#)
 - Cinnamon bark oil is considered a viable candidate to replace methylparaben in cosmetics to ensure they remain free of harmful microbes.[\[564\]](#)
 - *In vitro* research suggests that a blend of essential oils containing wild orange, clove, cinnamon, eucalyptus, and rosemary reduced influenza (A/PR8/34) infection activity by preventing the virus from hijacking the cell's production of genetic information in favor of producing the virus' genetic information.[\[565\]](#)
 - Animal and *in vitro* research concluded that cinnamaldehyde inhibits influenza A/PR/8 growth if administered within three hours after infection.[\[566\]](#) The same research also found that inhalation of 50 mg and administration of 250 mcg through the nasal of cinnamaldehyde per day reduced virus spread and increased survivability in mice.
-



CISTUS

Cistus ladanifer, *Cistus ladaniferus*

FAMILY: Cistaceae

NOTE: Middle-Base

AROMA INTENSITY: Medium

AROMA: Warm, sweet, herbaceous

COMMON EXTRACTION METHOD: Steam distilled from the leaves and branches of the flowering plant

POSSIBLE SUBSTITUTE OILS: Niaouli (viridiflorol CT), Spanish sage, geranium

BLENDS WELL WITH: Bergamot, cedarwood, chamomile (German, Roman), clary sage, copaiba, cypress, frankincense, lavender, juniper, patchouli, pine, sandalwood, spikenard, turmeric, vetiver

RECOMMENDED DILUTION RANGE: 5%–Neat

PRIMARY COMPOUNDS: [\[567\]](#), [\[568\]](#), [\[569\]](#), [\[570\]](#), [\[571\]](#), [\[572\]](#), [\[573\]](#)

Alpha-pinene CT

Alpha-pinene	5.3%–56.0%
Ledol	0.0%–13.8%
2,2,6-Trimethylcyclohexanone	0.9%–11.9%
Viridiflorol	0.0%–11.8%
Camphene	0.9%–10.0%
Para-Cymene	1.0%–4.8%
Bornyl acetate	1.9%–3.7%

Viridiflorol-Trans-Pinocarveol CT

Viridiflorol	13.6%–21.3%
Trans-Pinocarveol	1.2%–20.0%
Bornyl Acetate	0.0%–16.7%

Ledol	0.4%–6.6%
Terpinen-4-ol	0.7%–6.4%
Globulol	0.0%–5.0%
Alpha-pinene	0.1%–4.5%

OTHER COMPOUNDS: *Alpha-Pinene CT*—Tricyclene, alpha-thujene, sabinene, beta-pinene, alpha-terpinene, para-cymene, d-limonene, gamma-terpinene, terpinolene, alpha-campholene aldehyde, camphor, exo-methyl-camphenilol, terpineol-4, para-cymen-8-ol, alpha-terpineol, verbenone, para-mentha-1,4-dien-7-ol, alpha-cubebene, cyclosativen, delta-cadinene, diethyl phthalate, cyercene, pinadiene, borneol; *Viridiflorol-Trans-Pinocarveol CT*—Para-cymene, pinocarvone, bornyl acetate, 2,2,6-trimethylcyclohexanone, allo-aromadendrene, (Z)-ocimenone, viridiflorene, delta-cadinene, delta-verbenone, spathulenol, ambrox, sclareol oxide

REPORTED THERAPEUTIC PROPERTIES: Antimicrobial, antiseptic, astringent, expectorant, antiviral, antibacterial, **immune modulator**, anti-inflammatory, antineuralgic, eases cough, nervine (calms and soothes the nerves), **cell regenerating**, reduces appearance of scars, relieves shock, supports normal respiratory function, encourages lymph drainage, stops excess bleeding, helps relieve chronic skin conditions, relieves hemorrhoids and anal fissures, **wound healing**, helps one deal with traumatic events, promotes a peaceful feeling, reduces anxiety

CAUTIONS:

- None currently known.

SELECTED EVIDENCE:

- Cistus essential oil demonstrates significant activity against multidrug-resistant *Enterobacter aerogenes* EA289.[\[574\]](#) Enterobacter infections are associated with urinary tract infections, respiratory infections, skin, and soft-tissue infections.
-



CITRONELLA (Java Citronella)

Cymbopogon winterianus

FAMILY: Poaceae (Gramineae)

NOTE: Top-Middle

AROMA INTENSITY: Medium

AROMA: Citrusy, slightly fruity, sweet, fresh, clean

COMMON EXTRACTION METHOD: Steam distilled from the grass

POSSIBLE SUBSTITUTE OILS: Melissa, lemongrass, lemon verbena

BLENDS WELL WITH: Bergamot, cedarwood, geranium, grapefruit, lemon, lime, melissa, orange, pine, Spanish sage, tangerine

RECOMMENDED DILUTION RANGE: 3%–50%; neat for some conditions

PRIMARY COMPOUNDS: [\[575\]](#), [\[576\]](#), [\[577\]](#), [\[578\]](#), [\[579\]](#)

Citronellal	26.5%–42.8%
Geraniol	16.2%–40.1%
Elemol	2.0%–14.5%
Citronellol	5.2%–11.5%
Geranial	1.5%–8.1%
Alpha-Cadinol	0.5%–8.0%
Germacrene B	0.0%–6.8%
Neral	0.3%–6.0%
Geranyl Acetate	1.8%–4.0%

OTHER COMPOUNDS: D-limonene, citronellyl acetate, beta-elemene, germacrene A, germacrene D, delta-cadinene, 1,10-di-epi-Cubenol, 1-epi-cubenol, gamma-eudesmol, alpha-muurolol

REPORTED THERAPEUTIC PROPERTIES: Antiseptic, aids digestion, **anti-inflammatory**, antibacterial,

antifungal, antispasmodic, antioxidant, astringent, anticonvulsive, diuretic, reduces oily skin, **insect repellent**, relieves excess sweating, **deodorant**, nervine (calms and soothes the nerves), analgesic (pain relief), antirheumatic, antiparasitic, calming, clarifying (mentally)

CAUTIONS:

- Caution is advised during pregnancy and lactation due to citral content (low risk). Large doses of citral may negatively affect fetal development according to animal studies.[\[580\]](#)
- There is a low risk that when citronella is taken orally it may interfere with enzymes responsible for metabolizing medications (NSAIDs, proton-pump inhibitors, acetaminophen, antiepileptics, immune modulators, blood-sugar medications, blood pressure medications, antidepressants, antipsychotics, diabetic medications, antihistamines, antibiotics, and anesthetics).[\[581\]](#),[\[582\]](#)
- May interfere with medications used to treat high blood pressure (calcium channel blockers) and cause low blood pressure according to animal research.[\[583\]](#)
- Dilution recommended for topical application. Geraniol is metabolized and autoxidized into metabolites like geranial and neral and may cause sensitization and irritation when applied topically.[\[584\]](#)

SELECTED EVIDENCE:

- *In vitro* research suggests that inhaling the citronellal and citronellol molecules (found in citronella) interacts with cellular receptors, that triggers calcium-signaling pathways in cells, and significantly increases the calcium concentration in liver cancer cells.[\[585\]](#) Prolonged substantial increases of calcium inside cells triggers apoptosis, reduces the spread of cancer cells, and increases immune cells activity that target and kill cancer cells.[\[586\]](#)
- The primary compound in citronella, citronellal, increases the pain threshold and relieves pain according to animal research.[\[587\]](#) Another animal study also concluded that citronella is anti-inflammatory and helps relieve pain.[\[588\]](#)
- Citronella is a potent scavenger of nitric oxide (NO) and superoxide (SO), which helps relieve pain.[\[589\]](#) Both NO and SO are highly reactive compounds that cause cellular damage that leads to pain and inflammation.
- Citronella may promote vasorelaxation and decrease high blood pressure through calcium-channel blocking according to animal research.[\[590\]](#)
- Citronella demonstrates antifungal activity against *Candida albicans* that is similar in action to the antifungal drugs amphotericin B and nystatin.[\[591\]](#),[\[592\]](#)
- Animal research suggests that citronella influences central nervous system activity and modulates gamma-aminobutyric acid (GABA) activity to help prevent seizures and convulsions.[\[593\]](#)
- A study determined that a combination of citronella, turmeric, kaffir lime (*C. hystrix*), hairy basil (*O. americanum*), and vanilla could replace DEET (a common chemical insect repellent that is associated with brain cell damage and behavioral changes in animals) as a natural insect repellent.[\[594\]](#)
- *In vitro* research suggests that citronella is a potent antioxidant, and protects against DNA damage caused by hydrogen peroxide and methyl methanesulfonate (an alkylating and cancer-causing agent).[\[595\]](#)
- Citronellol relieves oral and facial pain by modulating central nervous system activity in mice.

[596]

- Animal research suggests that citronellol lowers blood pressure by increasing vasodilation (relaxation of the muscular wall and widening of the blood vessels). [597]



CLARY SAGE

Salvia sclarea

FAMILY: Lamiaceae

NOTE: Middle

AROMA INTENSITY: Medium

AROMA: Musky, herbal, sharp, warm

COMMON EXTRACTION METHOD: Steam distilled from the flowers and leaves

POSSIBLE SUBSTITUTE OILS: Bergamot, geranium, petitgrain, basil (Linalool CT), equal parts nutmeg and sage

BLENDS WELL WITH: Balsam fir, bay laurel, bergamot, black pepper, black spruce, blue spruce, cajeput, cedarwood, chamomile (German Roman), copaiba, coriander, grapefruit, juniper, lemon, lime, lavender, melaleuca (tea tree), neroli, orange, pine, sandalwood, petitgrain, palo santo, ravensara, rose, Spanish sage, spikenard, tangerine, turmeric

RECOMMENDED DILUTION RANGE: 3%–20%; 50% for some conditions

PRIMARY COMPOUNDS: [598],[599],[600],[601],[602],[603],[604]

Linalyl Acetate 16.9%–60.8%

Linalool 12.8%–38.6%

Alpha-Terpineol 1.8%–14.3%

Germacrene D 1.3%–13.3%

Geranyl Acetate 3.8%–12.1%

Sclareol 1.3%–11.5%

Epimanoyl oxide	0.0%–8.6%
Beta-Caryophyllene	3.2%–5.1%

OTHER COMPOUNDS: Myrcene, (Z)-beta-ocimene, (E)-beta-ocimene, nerol, neryl acetate, alpha-copaene, beta-cubebene, beta-elemene, bicyclogermacrene, delta-cadinene, beta-eudesmol, alpha-eudesmol, sclareol oxide, 1-docosene

REPORTED THERAPEUTIC PROPERTIES: Antibacterial, **balances estrogenic hormones**, antiseptic, antispasmodic, aphrodisiac, antiviral, **relieves painful menstruation and menstrual cramps**, expels excess gas, astringent, aids digestion, **euphoric**, nervine (calms and soothes the nerves), wound healing, sedating, **encourages a restful night's sleep**, **antidepressant**, reduces anxiety, stress management, promotes inspiration, combats confusion and despondency

CAUTIONS:

- Clary sage contains the phytoestrogen sclareol, which can either block or mimic the action of estrogen according to current knowledge. Some aromatherapists have contraindicated clary sage with estrogen-dependent cancers because of this. However, the available research does not suggest that clary sage increases the risk of estrogen-dependent cancers.[\[605\]](#)[\[606\]](#)[\[607\]](#)[\[608\]](#)[\[609\]](#) In fact, one study determined that while the presence of estradiol increased breast cancer cell proliferation with or without phytoestrogens, when only phytoestrogens were present breast cancer cell apoptosis increased.[\[610\]](#) Another study found that the dietary phytoestrogen genistein (from soy) reversed BRCA1 gene deficiency—the dysfunction of which is strongly associated with breast cancer—and triggered the expression of apoptosis-related genes.[\[611\]](#)
- Another concern with sclareol is that it may interfere with hormone replacement therapy. Theoretically clary sage could increase estradiol levels and potentiate the action of estrogen-replacement drugs. Because sclareol exerts much weaker estrogenic effects than the hormones administered during hormone replacement therapy, it is highly unlikely that it will interact with hormone-replacement therapy. In general, phytoestrogens are balancing in nature, but women who are undergoing hormone replacement therapy should have their estradiol levels checked regularly and consult with a physician before using clary sage.
- Avoid with barbiturates. Some evidence suggests that clary sage may increase the sedating effects of barbiturates like hexobarbital.[\[612\]](#)

SELECTED EVIDENCE:

- A daily abdominal massage with a combination of lavender, clary sage, and marjoram (2:1:1 ratio) from the end of the last menstruation to the beginning of the next menstruation significantly reduced painful menstruation according to a randomized, double-blind clinical trial.[\[613\]](#) Another study found that menstrual cramps were alleviated when 2 drops of lavender, and 1 drop each of clary sage, and rose in 5 ml of almond oil was applied to the abdomen.[\[614\]](#) Menstrual cramps were also reduced in high school girls that received an abdominal massage with clary sage, marjoram, cinnamon, ginger, and geranium in almond carrier oil.[\[615\]](#)
- The topical application of lavender and clary sage oils reduced work-related stress in intensive care unit nurses during three twelve-hour shifts.[\[616\]](#)
- Animal research suggests clary sage influences dopamine activity, which may help relieve

depression.[\[617\]](#)

- Clary sage may reduce anxiety, fear, and pain during labor.[\[618\]](#)
 - Clary sage moderately reduces inflammation (the whole oil was more effective than individual active compounds).[\[619\]](#)
 - *In vitro* research suggests that clary sage oil inhibits tetracycline resistant *S. epidermidis* (a gram-positive bacterium that lives on the skin associated with foreign body infections) and increases the effectiveness of tetracycline against the bacterial strain.[\[620\]](#)
-



CLOVE BUD

Syzygium aromaticum, *Eugenia caryophyllata*

FAMILY: Myrtaceae

NOTE: Middle

AROMA INTENSITY: Medium

AROMA: Spicy, warm, slightly fruity

COMMON EXTRACTION METHOD: Steam distilled from the flower buds (lesser quality oils also use the flowers, stems and leaves)

POSSIBLE SUBSTITUTE OILS: Black pepper, oregano

BLENDS WELL WITH: Black pepper, Cardamom, coriander, cinnamon, cajeput, eucalyptus, ginger, rosemary, Spanish sage, spikenard, turmeric

RECOMMENDED DILUTION RANGE: 1.5%–20%; 50% for some conditions

PRIMARY COMPOUNDS:[\[621\]](#),[\[622\]](#),[\[623\]](#),[\[624\]](#)

Eugenol 69.8%–87.0%

Epimanoyl oxide 5.0%–21.3%

Beta-Caryophyllene 3.1%–13.0%

OTHER COMPOUNDS: Alpha-humulene, alpha-caryophyllene, beta-caryophyllene oxide, alpha-humulene, epoxide, alpha-pinene, camphene, myrcene, alpha-terpinene, para-cymene, limonene, terpinen-4-ol, thymol, alpha-copaene, terpinolene, beta-phellandrene

REPORTED THERAPEUTIC PROPERTIES: Analgesic, anti-aging, antifungal, **aids digestion**, expels excess gas, anti-inflammatory, reduces the appearance of blemishes, **antimicrobial**, **antiviral**, antispasmodic, **antioxidant**, **antiseptic**, stimulates the production of glutathione S-transferase, expectorant, aids circulation, anticancer, stimulates brain function, purifies the blood, helps balance blood-sugar levels, **antiparasitic**, anesthetic, insect repellent, decongestant, stimulating, aphrodisiac, stress management, promotes self-confidence, self-assurance, and courage

CAUTIONS:

- Caution with pregnancy and lactation. Animal studies suggest that large doses of clove may negatively impact embryonic development and encourage fetal cell death. Another animal study did not detect any negative influence of clove oil. [\[625\]](#), [\[626\]](#), [\[627\]](#) Based on these studies it is best to limit clove oil during pregnancy and lactation.
- May interact with aspirin, blood pressure, antiplatelet, and anticoagulant medications, and increase the risk of bleeding among people with bleeding disorders. [\[628\]](#), [\[629\]](#), [\[630\]](#), [\[631\]](#)
- May interact with MAOI antidepressants. Animal research suggests that eugenol produces antidepressant effects via the monoamine oxidase pathway, which may cause interactions with antidepressants that also interact with this pathway. [\[632\]](#)
- May interact with antibiotics and possibly enhance their effects. [\[633\]](#)
- May irritate mucous membranes (eyes, mouth, nasal passages, vagina, rectum).
- Extreme oral doses (greater than 5 ml in a single dose) of clove have caused toxicity and serious adverse events (usually liver failure). [\[634\]](#), [\[635\]](#), [\[636\]](#), [\[637\]](#) Typical doses of clove oil should not cause the same problem nor be a concern.

SELECTED EVIDENCE:

- Clove demonstrated excellent activity against breast, colorectal, lung, and leukemia cancer cells *in vitro*. [\[638\]](#), [\[639\]](#), [\[640\]](#) Eugenol modulates gene expression and pathways to prevent skin cancer in mice. [\[641\]](#)
- Both clove oil and eugenol significantly inhibit the acetylcholinesterase enzyme from breaking down acetylcholine. [\[642\]](#) This activity may be beneficial to a number of neurological disorders including Alzheimer's disease, myasthenia gravis, Lewy body dementia, and schizophrenia.
- Clove causes the programmed cell death (apoptosis) of *Leishmania donovani* promastigotes (an intracellular parasitic protozoa). [\[643\]](#), [\[644\]](#)
- *In vitro* research suggests that clove oil is a strong inhibitor of the bacterium *P. acnes*, which is suspected of being the major bacterium that causes acne. [\[645\]](#)
- Eugenol (the main compound of clove oil) blocks the action of multiple pro-inflammatory molecules involved in arthritis according to animal research. [\[646\]](#) Based on these activities the researchers concluded that clove "could be useful as a beneficial supplement in treating human arthritis." Another study concluded that clove oil provided an equivalent anti-inflammatory effect to the NSAID etodolac. [\[647\]](#)
- Clove oil modulates and stimulates immune system activity by increasing white blood cell count

and reducing inflammation by inhibiting the production and activity of proinflammatory cytokines.[\[648\]](#),[\[649\]](#),[\[650\]](#) The same research discovered that it also restores cellular and humoral immune responses in animals immunosuppressed by cyclophosphamide (a medication used to treat several types of cancer that suppresses the immune system).

- Clove oil and eugenol stimulate the production of the mucosal lining of the stomach and protect against ulcers according to animal research.[\[651\]](#)
 - *In vitro* research suggests that clove oil can destroy *Candida albicans* (including drug-resistant *C. albicans*) and prevent recurrent infections associated with the growth of *C. albicans*.[\[652\]](#),[\[653\]](#)
 - *In vitro* research concluded that clove oil inhibits the murine norovirus (a norovirus that affects mice but is used in research to study the effects of drugs and other remedies against human norovirus).[\[654\]](#)
 - Low doses of clove oil significantly prevented lipid peroxidation of the membranes and the premature destruction (hemolysis) of red blood cells in mice.[\[655\]](#)
 - Animal research suggests that clove oil may improve cognitive function and enhance memory retention.[\[656\]](#)
 - A case report describes the use of a combination of the essential oil of lemongrass, eucalyptus, melaleuca (tea tree), clove, thyme and BHT, triclosan, and undenatured alcohol to treat a chronic infection of the lower tibia (osteomyelitis) that was not responding to several courses of IV antibiotics. Amputation of the lower leg was being considered when a physician recommended the leg be opened up and the combination inserted directly into the bone (through a drilled hole, 1 ml per day for forty-eight hours). At three months, the wound and bone healed, and symptoms were resolved.[\[657\]](#)
 - Clove oil prevents infection with and kills giardial parasites.[\[658\]](#)
 - Animal research suggests that clove oil reduces depression by enhancing hippocampal pathways that modify mood and encourage adaptive behaviors.[\[659\]](#)
 - A foot bath (107°F water) with salts and either oregano, thyme, cinnamon bark, lemongrass, clove, palmarosa, peppermint, lavender, or geranium significantly reduced fungi associated with athlete's foot *in vitro*.[\[660\]](#)
 - Clove oil helps decrease inflammation by mildly inhibiting the 5-lipoxygenase (5-LOX) enzyme that is involved in the inflammation response according to *in vitro* research.[\[661\]](#)
 - Of twenty-one essential oils tested, clove was second only to cinnamon as an inhibitor of *S. aureus*, *B. subtilis*, *K. pneumoniae*, *P. vulgaris*, *P. aeruginosa*, and *E. coli*.[\[662\]](#)
 - Clove and eugenol prevent the production of melanin in melanoma cells.[\[663\]](#) The presence of melanin may facilitate the development of melanoma if exposed to UV radiation.[\[664\]](#)
 - A combination of clove and thyme oil prevents the degradation of lipids in the skin caused by UV exposure and oxidative damage.[\[665\]](#)
 - Clove oil and its compounds (eugenol, beta-caryophyllene, beta-caryophyllene oxide, alpha-humulene epoxide, and alpha-humulene) found in clove oil may help prevent dental cavities.[\[666\]](#), [\[667\]](#) The same researchers found that these compounds significantly increased glutathione S-transferase activity.
 - Eugenol reduces the growth of cells inside portal tracts of livers and inflammation of the bile ducts in rats with cholestasis (when the flow of bile is slowed or blocked).[\[668\]](#)
 - Eugenol effectively kills scabies mites, which cause an itchy skin rash.[\[669\]](#)
-



COPAIBA BALSAM

Copaifera langsdorffii, *Copaifera langsdorffii*, *Copaifera officinalis*

FAMILY: Fabaceae (Leguminosae)

NOTE: Base

AROMA INTENSITY: Medium

AROMA: Woody, mild, slightly balsamic, sweet

COMMON EXTRACTION METHOD: Steam distilled from the resin/gum

POSSIBLE SUBSTITUTE OILS: Black pepper, niaouli (1,8-cineole/viridiflorol CT), ginger, frankincense

BLENDS WELL WITH: Balsam fir, bergamot, black spruce, blue spruce, cedarwood, clary sage, galbanum, lavender, lemon, lime, orange, palo santo, pine, ravintsara, tangerine, ylang ylang

RECOMMENDED DILUTION RANGE: 5%–Neat

PRIMARY COMPOUNDS: [\[670\]](#), [\[671\]](#), [\[672\]](#)

Beta-Caryophyllene	36.5%–53.3%
Daniellic Acid	2.6%–33.7%
Alpha-Copaene	1.6%–18.2%
Beta-Bisabolene	1.0%–12.7%
Alpha-Bergamotene	1.0%–11.8%
Caryophyllene Oxide	0.3%–10.2%
Kaurenoic Acid	0.0%–10.1%
Hardwickiic Acid	0.0%–9.0%
Alpha-Humulene	1.1%–8.6%
Copalic Acid	2.1%–7.6%
Delta-Amorphene	0.0%–5.4%
Beta-Selinene	0.5%–4.7%
Germacrene D	1.2%–4.6%

Gamma-Cadinene 0.8%–4.6%

OTHER COMPOUNDS: Alpha-elemene, alpha-cubebene, beta-elemene, cyperene, gamma-elemene, gamma-murolene, alpha-amorphene, alpha-selinene, allo-aromadendrene, bicyclogermacrene, alpha-murolene, beta-sesquiphellandrene, iso-gamma-bisabolene (E), alpha-murolol, eperuic acid, kovalenic acid, pinifolic acid, acetoxy-copalic acid

REPORTED THERAPEUTIC PROPERTIES: Analgesic (pain relief), **anti-inflammatory**, **antibacterial**, **antifungal**, antiseptic, **expectorant**, decongestant, supports immune function, **wound healing**, relieves anxiety, aids digestion, stimulates pancreas and liver function, stress management, stimulating, aids concentration and focus, promotes introspection, encourages emotional healing

CAUTIONS:

- None currently known.

SELECTED EVIDENCE:

- Animal research suggest copaiba reduces inflammation and both central and peripheral pain.[\[673\]](#), [\[674\]](#),[\[675\]](#)
 - Copaiba oil reduces the abnormal growth of endometrial tissue and reduces the severity of endometriosis in animals.[\[676\]](#)
 - Topical or oral administration of copaiba oil reduces the production of pro-inflammatory molecules and improves symptoms of psoriasis (skin scaliness, redness, and thickness) in a small clinical trial.[\[677\]](#)
 - Copaiba oil is effective against the *S. mutans* bacteria that is considered the primary organism responsible for dental cavities.[\[678\]](#),[\[679\]](#)
 - A 1% copaiba oil solution significantly decreased the appearance of acne in a clinical trial.[\[680\]](#)
 - Copaiba promotes wound healing.[\[681\]](#) Topical application of copaiba oil increased blood vessel growth (angiogenesis) to and the viability of random skin flaps (skin and tissue that is removed to cover a nearby wound) in rats.[\[682\]](#) It also reduces inflammation and cellular damage that cause tissue death.[\[683\]](#)
 - Copaiba oleo-resin protects the intestines from oxidative damage to tissues and organs caused by a loss of and subsequent return of blood supply (ischemia/reperfusion) according to animal research.[\[684\]](#) It also protects the stomach from ulcers caused by the NSAID indomethacin.[\[685\]](#)
 - Animal research suggests that copaiba oleo-resin protects against colon inflammation and damage caused by colitis.[\[686\]](#)
 - Copaiba helps decrease inflammation by strongly inhibiting the 5-lipoxygenase (5-LOX) enzyme that is involved in the inflammation response *in vitro*.[\[687\]](#)
 - Beta-caryophyllene selectively inhibits the growth of animal cancer cells without harming normal cells *in vitro*.[\[688\]](#)
-



CORIANDER (Seed)

Coriandrum sativum

FAMILY: Apiaceae (Umbelliferae)

NOTE: Top-Middle

AROMA INTENSITY: Medium

AROMA: Sweet, spicy, woody, slightly balsamic

COMMON EXTRACTION METHOD: Steam distilled from the seeds

POSSIBLE SUBSTITUTE OILS: Lavender, petitgrain, basil (Linalool CT), fennel

BLENDS WELL WITH: Bergamot, black pepper, cardamom, cinnamon, clary sage, clove, cypress, frankincense, geranium, ginger, grapefruit, lemon, neroli, nutmeg, orange, pine, rosemary, sandalwood, tangerine, vetiver, ylang ylang

RECOMMENDED DILUTION RANGE: 5%–50%; neat for some conditions

PRIMARY COMPOUNDS: [\[689\]](#), [\[690\]](#), [\[691\]](#)

Linalool	51.0%–79.9%
Alpha-pinene	1.2%–15.5%
Neryl Acetate	0.0%–14.2%
Gamma-Terpinene	4.6%–13.6%
Dodecanal	0.1%–8.1%
Para-Cymene	0.8%–4.4%
Limonene	0.1%–4.0%

OTHER COMPOUNDS: Camphene, camphor, beta-pinene, myrcene, camphor, geraniol, geranyl acetate, terpinen-4-ol, alpha-terpineol, sabinene, decanal, nerol, carvacrol, thymol, citronellyl, undecanal, n-tetradecane, beta-caryophyllene, benzyl benzoate, n-hexadecane

REPORTED THERAPEUTIC PROPERTIES: Analgesic (pain relief), antibacterial, antirheumatic,

antispasmodic, antineuralgic, **antifungal**, aphrodisiac, **expels excess gas**, **aids digestion**, aids weight loss, **encourages blood-sugar balance**, breaks down fats, circulatory stimulant, relieves headache (migraine), purifies the blood, **stimulates appetite**, helps relieve painful menstruation, revitalizing, stimulating, warming, antidepressant, reduces anxiety, reduces irritation (emotional), enhances memory and cognition

CAUTIONS:

- May interact with diabetic medications. Studies suggest that coriander significantly lowers glucose in animals, which may increase the action of diabetic medications.[\[692\]](#),[\[693\]](#),[\[694\]](#)
- May interact with antibiotics and possibly enhance their effects.[\[695\]](#)

SELECTED EVIDENCE:

- Coriander potently inhibits *E. coli*, which is suspected of altering intestinal flora balance.[\[696\]](#) This disrupted flora balance is suspected as a causal factor in triggering irritable bowel syndrome.
 - Animal research suggests that the inhalation of coriander oil may improve spatial memory (ability to recall information about one's environment) and reduce oxidative stress of the hippocampus in rats with cognitive impairment.[\[697\]](#)
 - Coriander oil possess antifungal activity against *Candida* spp.[\[698\]](#)
 - Animal research suggests that coriander selectively kills and prevents the spread of cancer cells while leaving normal cells unharmed.[\[699\]](#) The researchers concluded that it exerts a pro-oxidant effect to tumor tissue and an antioxidant effect in the liver.
 - Coriander oil may significantly prevent DNA from bonding to a cancer-causing chemicals (DNA adduct formation) and therefore help prevent cancer.[\[700\]](#)
 - Coriander oil enhanced the activity of the antibiotics ciprofloxacin, gentamicin, and tetracycline against *A. baumannii* (a bacteria that commonly infects those with a compromised immune system, like those in intensive care units).[\[701\]](#)
 - Coriander oil is active against *S. pyogenes* (a bacteria that causes strep throat, scarlet fever, impetigo, cellulitis, and tonsillitis), *S. aureus*, and MRSA and is tolerated well when applied topically, making it an excellent choice for the prevention and treatment of skin infections by these bacteria.[\[702\]](#)
 - Coriander oil is effective against *C. albicans* alone or in combination with amphotericin B (an antifungal drug used for potentially life-threatening fungal infections).[\[703\]](#) Another study tested the major compounds of coriander oil and coriander oil against *C. albicans* and found that the oil has stronger activity than any of its major compounds alone.[\[704\]](#)
 - Clinical research suggests coriander oil mildly reduces skin inflammation, redness, and rash following UVB exposure at a concentration of 0.5%.[\[705\]](#)
 - Extracts of coriander help normalize blood-sugar levels in animals, possibly by inhibiting alpha-glucosidase.[\[706\]](#),[\[707\]](#)
-



CYPRESS (Mediterranean Cypress)

Cupressus sempervirens

FAMILY: Cupressaceae

NOTE: Middle

AROMA INTENSITY: Medium

AROMA: Fresh, slightly woody, evergreen

COMMON EXTRACTION METHOD: Steam distilled from the needles and twigs

POSSIBLE SUBSTITUTE OILS: Pine, balsam fir, silver fir, cedarwood, juniper berry, helichrysum, frankincense

BLENDS WELL WITH: Bay laurel, bergamot, blue cypress, camphor, cedarwood, clary sage, coriander, frankincense, juniper, lavender, lemon, lime, marjoram, orange, palo santo, pine, rosemary, sandalwood, Spanish sage, spikenard

RECOMMENDED DILUTION RANGE: 3%–Neat

PRIMARY COMPOUNDS: [\[708\]](#), [\[709\]](#), [\[710\]](#), [\[711\]](#), [\[712\]](#)

Alpha-pinene	30.0%–64.2%
Delta-3-Carene	11.1%–22.7%
Alpha-Terpinolene	4.5%–6.6%
Alpha-Terpinyl Acetate	0.0%–6.6%
Limonene	2.0%–5.4%

OTHER COMPOUNDS: Alpha-thujene, alpha-fenchene, camphene, sabinene, beta-pinene, myrcene, 1,3-para-menthadiene, o-cymene, 1,8-cineole, gamma-terpinene, germacrene D, delta-cadinene, alpha-cedrol, 4-terpineol

REPORTED THERAPEUTIC PROPERTIES: Antibacterial, anti-inflammatory, antiseptic, antispasmodic, **astringent**, relieves painful menstruation, **circulatory stimulant**, **diuretic**, **stops excess bleeding**,

supports liver health, helps heal hemorrhoids, deodorant, expectorant, **respiratory stimulant**, eases cough, **helps relieve excess perspiration**, promotes fluid balance and removes excess fluids from the body, relieves oily skin, warming, sedating, combats grief and trauma, aids the emotions during difficult transitions, eases feelings of being overwhelmed, promotes confidence, diminishes guilt and perfectionism, promotes a sense of security

CAUTIONS:

- May interact with aspirin, blood pressure, antiplatelet, and anticoagulant medications, and increase the risk of bleeding among people with bleeding disorders.[\[713\]](#)

SELECTED EVIDENCE:

- Cypress oil prevents the spread of melanoma cancer cells *in vitro*.[\[714\]](#)
 - Cypress oil is an effective nitric oxide free-radical scavenger (antioxidant).[\[715\]](#) It also prevents the nonenzymatic bonding of lipids to sugars (glycation).[\[716\]](#) Damage caused by glycation can lead to stiffening of the blood vessel walls and high blood pressure, particularly among diabetics.
 - Cypress possesses antifungal properties against the fungi (*A. aspergillus*, *F. oxysporum*, and *R. stolonifer*) and the bacterium (*S. aureus*, *E. faecalis*, *B. cereus*, *E. coli*, and *P. aeruginosa*).[\[717\]](#)
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EUCALYPTUS

Eucalyptus globulus, *Eucalyptus radiata*

FAMILY: Myrtaceae

NOTE: Top

AROMA INTENSITY: Strong

AROMA: Fresh, clean, medicinal, slightly woody

COMMON EXTRACTION METHOD: Steam distilled from the leaves

POSSIBLE SUBSTITUTE OILS: Niaouli (1,8-cineole CT), bay laurel, cajeput, ravintsara (1,8-cineole CT), ravensara (1,8-cineole CT), cardamom, rosemary (1,8-cineole CT), myrtle, sage (1,8-cineole CT)

BLENDS WELL WITH: Bay laurel, bergamot, blue cypress, cajeput, cedarwood, camphor, chamomile (German, Roman), geranium, ginger, grapefruit, peppermint, lavender, lemon, juniper, lemongrass, petitgrain, pine, ravensara, ravintsara, rosemary, sage, melaleuca (tea tree), tangerine, thyme

RECOMMENDED DILUTION RANGE: 3%–33%; neat for some conditions

PRIMARY COMPOUNDS: [\[718\]](#), [\[719\]](#), [\[720\]](#), [\[721\]](#), [\[722\]](#), [\[723\]](#), [\[724\]](#), [\[725\]](#)

Eucalyptus globulus

1,8-Cineole	33.6%–83.9%
Alpha-pinene	4.5%–14.2%
D-Limonene	0.4%–10.1%
Beta-Pinene	0.3%–5.2%
Para-Cymene	0.0%–5.1%

Eucalyptus radiata

1,8-Cineole	22.4%–74.3%
Alpha-Terpineol	0.0%–15.2%
Alpha-pinene	0.2%–11.9%
Trans-Pinocarveol	0.0%–4.8%
Limonene	0.5%–4.5%

OTHER COMPOUNDS: *Eucalyptus globulus*—Alpha-phellandrene, alpha-terpinene, alpha-terpineol, alpha-terpineol acetate, beta-myrcene, gamma-terpinene, sabinene, terpinen-4-ol, alloaromadendrene, aromadendrene, globulol, alpha-cadinol; *Eucalyptus radiata*—Beta-pinene, sabinene, alpha-myrcene, isosativene, aristolene, solanone, alpha-myrcene, terpinyl acetate, trans-verbenol, terpinen-4-ol

REPORTED THERAPEUTIC PROPERTIES: Analgesic, antibacterial, antifungal, **antirheumatic**, **antiseptic**, antispasmodic, anesthetic, **antiviral**, antineuralgic, **decongestant**, diuretic, **expectorant**, helps balance blood-sugar levels, **supports normal respiration**, reduces fevers, insect repellent, nervine (calms and soothes the nerves), **reduces abnormal bone growth**, promotes oral cleanliness, wound healing, **eases cough**, stimulating, invigorating, refreshing, aids concentration, combats negative emotions, relieves mental exhaustion

CAUTIONS:

- Avoid with children under age 3, particularly around the nose and mouth. Use very cautiously in children under age 5 due to high 1,8-cineole content. 1,8-cineole may cause seizures, central nervous system problems, or respiratory distress in young children. [\[726\]](#), [\[727\]](#), [\[728\]](#)
- Avoid with epilepsy and Parkinson's disease due to 1,8-cineole content. May exacerbate or cause seizures or convulsions based on 1,8-cineole content. [\[729\]](#), [\[730\]](#), [\[730a\]](#)

- Caution is warranted orally due to the significant amounts of 1,8-cineole. Limit it to small doses internally (adults—maximum 10 drops daily). One text recommends a maximum daily dose of 6 drops.[\[731\]](#) Toxicity has been reported when eucalyptus (also high in 1,8-cineole) was ingested in large doses, and as few as 4 to 5 drops may cause problems in very sensitive individuals.[\[732\]](#),[\[733\]](#),[\[734\]](#),[\[735\]](#),[\[736\]](#),[\[737\]](#) In humans, 3.5 to 5 ml has proven fatal orally.[\[738\]](#)
- May weakly interfere with the enzymes responsible for metabolizing medications based on research with an herbal extract (NSAIDs, proton-pump inhibitors, acetaminophen, antiepileptics, immune modulators, blood-sugar medications, blood-pressure medications, antidepressants, antipsychotics, diabetic medications, antihistamines, antibiotics, and anesthetics).[\[739\]](#)
- May interact with diabetic medications. Studies suggest that coriander significantly lowers glucose in animals, which may increase the action of diabetic medications.[\[740\]](#)
- May interact with aspirin, blood-pressure, antiplatelet, and anticoagulant medications, and increase the risk of bleeding among people with bleeding disorders.[\[741\]](#)
- May interfere with pentobarbital and other barbiturates (medications for anxiety and insomnia) based on 1,8-cineole content.[\[742\]](#),[\[743\]](#)

SELECTED EVIDENCE:

- The main compound in eucalyptus, 1,8-cineole, may benefit people with asthma and chronic obstructive pulmonary disease by reducing airway inflammation and excess mucous production (both inflammation and infection caused).[\[744\]](#)
- A study determined that *E. globulus* may be a good candidate for a “natural antibiotic for the treatment of several infections” caused by *S. aureus* and *E. coli*.[\[745\]](#) It also is an effective treatment for MRSA and *P. aeruginosa*.[\[746\]](#),[\[747\]](#)
- *E. globulus* kill the ectoparasite (*Pediculus humanus*) that cause head lice, including those that are resistant to permethrin (a common drug used to kill head lice).[\[748\]](#)
- A case report describes the use of a combination of the essential oils of lemongrass, eucalyptus, melaleuca (tea tree), clove, thyme and BHT, triclosan, and undenatured alcohol to treat a chronic infection of the lower tibia (osteomyelitis) that was not responding to several courses of IV antibiotics. Amputation of the lower leg was being considered when a physician recommended the leg be opened up and the combination inserted directly into the bone (through a drilled hole, 1 ml per day for forty-eight hours). At three months, the wound and bone healed, and symptoms were resolved.[\[749\]](#)
- An oral spray containing *E. globulus*, *E. citriodora*, *M. piperita*, *O. syriacum*, and *R. officinalis* (applied five times a day for three days) reduced the severity of the most debilitating symptoms (sore throat, hoarseness, or cough) of upper respiratory tract infections within twenty minutes of application according to a small clinical trial of sixty people.[\[750\]](#)
- Inhalation of *E. globulus* significantly increased dopamine release (almost a 2.5 fold increase) from rat brain cells.[\[751\]](#)
- *In vitro* research suggests that *E. globulus* is active against six respiratory pathogens (*H. influenzae*, *H. parainfluenzae*, *S. maltophilia*, *S. aureus*, *S. pyogenes*—a bacteria that causes strep throat, scarlet fever, impetigo, cellulitis, and tonsillitis—and *S. pneumoniae*).[\[752\]](#),[\[753\]](#)
- *E. globulus* may improve chronic inflammatory airway conditions by reducing toll-like receptor 4 (TLR4) activity in the bronchioles and excess production of airway mucous caused by lipopolysaccharides (LPS) according to animal research.[\[754\]](#),[\[755\]](#) TLRs are crucial receptors

that trigger responses to pathogens. Excess activation of TLRs can lead to allergic and inflammatory responses in the airways.

- Topical application of a 1.5% solution containing lavender, marjoram, eucalyptus, rosemary, and peppermint (2:1:2:1:1 ratio), in a carrier oil consisting of 45% apricot, 45% almond, and 10% jojoba carrier oils significantly decreased pain and depression in people with arthritis.[\[756\]](#)
 - *In vitro* research suggests that *E. globulus* possesses both central analgesic (act directly on the central nervous system to relieve pain by binding to opioid receptors in the brain and possibly the spinal cord) and peripheral analgesic (inhibit the production of pain-producing substances in the peripheral nervous system) properties.[\[757\]](#) The peripheral nervous system includes the nerves and ganglia (clusters of nerves and nerve fibers) outside the brain and spinal cord.
 - Research suggests *E. globulus* possess antimicrobial activity that make it useful as a preservative in the food and pharmaceutical industry.[\[758\]](#)
 - *E. globulus* strongly inhibits the fungi *A. fumigatus* (a common fungi that causes respiratory tract infections in people with a suppressed immune system or chronic lung disease) and *A. niger* (a common fungus that can infect humans and produce potent toxins, called mycotoxins).[\[759\]](#)
 - *E. globulus* scavenges nitric oxide (NO) free radicals and inhibits net NO production to reduce inflammation.[\[760\]](#) Excess production of NO encourages an abnormal inflammatory response in the joints, gut, and lungs.[\[761\]](#)
 - Topical application of a combination of eucalyptus and peppermint oil and ethanol to the forehead and temples of healthy people with a sponge enhanced cognitive performance and produced a muscle-relaxing and mentally relaxing effect.[\[762\]](#)
 - *In vitro* research reported that eucalyptus oil provides a sun protection factor (SPF) of 2.625.[\[763\]](#)
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FENNEL (Sweet)

Foeniculum vulgare

FAMILY: Apiaceae (Umbelliferae)

NOTE: Middle

AROMA INTENSITY: Medium

AROMA: Sweet, earthy, licorice-like

COMMON EXTRACTION METHOD: Steam distilled from the seeds (fruit)

POSSIBLE SUBSTITUTE OILS: Ravensara (methyl chavicol CT), clary sage, basil (linalool CT)

BLENDS WELL WITH: Balsam fir, basil, bay laurel, bergamot, black pepper, camphor, cardamom, carrot seed, cinnamon, cypress, eucalyptus, geranium, grapefruit, juniper, lavender, lemon, lemon verbena, marjoram, myrrh, niaouli, orange, patchouli, pine, rose, rosemary, sandalwood, tangerine, ylang ylang

RECOMMENDED DILUTION RANGE: 5%–Neat (*trans-anethole CT*); 1.5%–20%, 50% for some conditions (*methyl chavicol (estragole) CT*)

PRIMARY COMPOUNDS: [\[764\]](#), [\[765\]](#), [\[766\]](#), [\[767\]](#), [\[768\]](#), [\[769\]](#), [\[770\]](#), [\[771\]](#), [\[772\]](#), [\[773\]](#)

Methyl Chavicol (Estragole) CT

Methyl Chavicol (Estragole)	57.9%–93.9%
Limonene	0.1%–22.4%
Trans-Anethole	1.4%–19.0%
Fenchone	1.0%–10.4%
Alpha-Pinene	0.2%–3.6%

Trans-Anethole CT

Trans-Anethole	31.0%–94.6%
Fenchone	1.0%–34.7%
Limonene	0.3%–16.5%
Carvacrol	0.0%–12.6%
Alpha-Pinene	0.2%–12.4%
Alpha-Phellandrene	0.1%–10.5%
Cis-Anethole	0.1%–8.6%
Methyl Chavicol (Estragole)	2.6%–8.2%
Para-Cymene	0.0%–6.0%

OTHER COMPOUNDS: *Methyl Chavicol (Estragole) CT*—Sabinene, beta-pinene, para-cymene, 1,8-cineole, gamma-terpinene, camphor; *Trans-Anethole CT*—Gamma-terpinene, myrcene, para-anisaldehyde, para-acetonylanisole

REPORTED THERAPEUTIC PROPERTIES: Aids digestion, expels excess gas, colic, relieves constipation and diarrhea, relieves cough, diuretic, expectorant, helps balance blood-sugar levels, antitumor, antiparasitic, analgesic (pain relief), **antifungal**, enhances metabolism, **helps balance menstruation**, antiseptic, helps reduce the appearance of blemishes, energizing, encourages open communication, promotes self-confidence, reduces anxiety, promotes balanced emotions

CAUTIONS:

- Use with caution and highly diluted for children under 6 due to methyl chavicol and trans-anethole content (methyl chavicol and trans-anethole CTs). [\[774\]](#)

- Long-term oral use (fennel tea) may cause premature breast development in very young girls—usually under age 2. Long-term oral use is not recommended for children under age 12.[\[775\]](#)
- Avoid during pregnancy and lactation. Large doses of fennel may be toxic to fetal cells based on animal research.[\[776\]](#),[\[777\]](#) Nephrotoxicity (kidney toxicity) has been reported in infants whose mothers drank an herbal tea that contained fennel.[\[778\]](#)
- Oral caution (methyl chavicol CT). Significant amounts of the cancer-causing compound methyl chavicol (estragole) can be found in fennel (methyl chavicol CT); however, research suggests that other compounds in this CT may inactivate the cancer-causing potential of methyl chavicol. Nevertheless, it would be wise to limit oral consumption of the methyl chavicol CT to no more than 5 drops daily as a precaution.[\[779\]](#),[\[780\]](#),[\[781\]](#)
- Avoid with epilepsy and Parkinson’s due to fenchone content.[\[782\]](#),[\[783\]](#)
- May interact with aspirin, blood-pressure, antiplatelet, and anticoagulant medications, and increase the risk of bleeding among people with bleeding disorders.[\[784\]](#),[\[785\]](#),[\[786\]](#),[\[787\]](#)
- May interact with diabetes medications and cause low blood sugar.[\[788\]](#)
- Fennel contains significant amounts of the phytoestrogen anethole. Anethole exhibits weak estrogenic activity[\[789\]](#) and many aromatherapy texts suggest to avoid fennel with endometriosis, oral contraceptives, hormone replacement therapy, and estrogen-dependent cancers because of this. However, research suggests that anethole may promote destruction (apoptosis) of cancer cells—including both estrogen-positive and estrogen-negative breast cancer cells—and phytoestrogens are generally balancing with the ability to either mimic or block the action of estrogen according to current knowledge.[\[790\]](#),[\[791\]](#) In addition, anethole reduced painful uterine contractions in the rat uterus.[\[792\]](#) A follow up clinical study confirmed the animal results, and suggests that fennel essential oil reduces painful menstruation and excess menstrual bleeding, and relaxes the smooth muscles of the uterus.[\[793\]](#) Lastly, another study found that 97.5% of women treated with a traditional Chinese medicine formula containing fennel and cordyceps experienced improvements in their endometrial symptoms.[\[794\]](#) Based on this, reasonable doses pose little risk of interaction or contraindication.
- May interfere with fluoroquinolone antibiotics according to research with fennel herb in animals.[\[795\]](#)
- May interfere with the enzymes responsible for metabolizing medications based on research with an herbal extract (NSAIDs, proton-pump inhibitors, acetaminophen, antiepileptics, immune modulators, blood-sugar medications, blood-pressure medications, antidepressants, antipsychotics, diabetic medications, antihistamines, antibiotics, and anesthetics).[\[796\]](#),[\[797\]](#)

SELECTED EVIDENCE:

- *In vitro* research suggests that fennel oil combats fungal infections of the skin, hair, and nails better than standard drug options.[\[798\]](#)
- Fennel essential oil significantly reduces anxiety in animals.[\[799\]](#)
- Fennel oil inhibits the *K. pneumoniae* bacterium that can cause pneumonia, bloodstream infections, wound or surgical site infections, and meningitis.[\[800\]](#)
- Animal research suggests that fennel oil may protect DNA from damage, reduce bone marrow cell death, and reduce abnormal sperm caused by cyclophosphamide (a drug used to treat leukemia, cancer, and lymphomas).[\[801\]](#)
- *In vitro* research suggests fennel oil significantly inhibits *C. albicans*, *S. typhimurium*, and *S.*

dysenteriae.

- Animal research suggests that fennel oil protects against the formation of blood clots by causing vasorelaxation and clot destabilization.[\[802\]](#)
 - Inhalation of fennel essential oil increases sympathetic nervous system activity and adrenaline levels, which suggests it may improve alertness.[\[803\]](#)
 - *In vitro* research suggests that anethole may promote destruction (apoptosis) of ovarian and breast cancer cells.[\[804\]](#),[\[805\]](#)
 - Animal research suggests that anethole reduces painful uterine contractions in the rat uterus.[\[806\]](#) A follow up clinical study confirmed the animal results, and suggests that fennel essential oil reduces painful menstruation and excess menstrual bleeding, and relaxes the smooth muscles of the uterus.[\[807\]](#)
 - Fennel oil significantly inhibits the *C. jejuni* bacterium that is one of the world's most common cases of the stomach flu (gastroenteritis).[\[808\]](#)
 - Fennel oil inhibited multi-drug-resistant *A. baumannii* (a bacteria that commonly infects those with a compromised immune system, like those in intensive care units).[\[809\]](#) It also was active against *E. coli*, *L. monocytogenes*, *S. typhimurium*, and *S. aureus* at low concentrations.[\[810\]](#),[\[811\]](#)
 - Animal research suggests that fennel oil possesses bronchodilatory properties, possibly by influencing the potassium channel.[\[812\]](#)
 - Fennel oil protected rats against liver damage caused by carbon tetrachloride (an inorganic compound associated with liver and kidney damage).[\[813\]](#)
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FRANKINCENSE

Boswellia sacra, *Boswellia carterii* (*B. carteri*), *Boswellia frereana*

FAMILY: Burseraceae

NOTE: Base

AROMA INTENSITY: Medium

AROMA: Balsamic, rich, warm, slightly spicy, sweet, woody

COMMON EXTRACTION METHOD: Steam distilled from the resin

POSSIBLE SUBSTITUTE OILS: Palo santo, niaouli (viridiflorol/para-cymene/1,8-cineole CT), equal parts petitgrain (mandarin) and cedarwood, equal parts cistus and white fir

BLENDS WELL WITH: Basil, bay laurel, bergamot, black pepper, camphor, cassia, cinnamon, coriander, cypress, geranium, grapefruit, lavender, lemon, myrrh, neroli, orange, pine, petitgrain, palo santo, ravensara, ravintsara, rose, sandalwood, spikenard, tangerine, vetiver, ylang ylang

RECOMMENDED DILUTION RANGE: 3%–50%; neat for some conditions

PRIMARY COMPOUNDS: [\[814\]](#), [\[815\]](#), [\[816\]](#), [\[817\]](#), [\[818\]](#), [\[819\]](#), [\[820\]](#), [\[821\]](#), [\[822\]](#), [\[823\]](#)

Boswellia carterii

Alpha-pinene	2.0%–64.0%
Alpha-Thujene	1.0%–52.4%
Octyl Acetate	0.0%–39.3%
Limonene	1.0%–20.4%
Para-Cymene	3.0%–17.0%
1-Octanol	0.0%–11.9%
Myrcene	0.5%–8.2%
Alpha-Cedrene	0.0%–6.1%
Alpha-Copaene	0.0%–5.5%
Sabinene	0.0%–4.9%
Delta-Cadinene	0.0%–2.6%
Incensole Acetate	0.0%–2.3%
Camphene	0.0%–2.1%
Beta-Pinene	0.0%–2.1%

Boswellia frereana

Alpha-pinene	2.0%–64.7%
Alpha-Thujene	0.0%–33.1%
Para-Cymene	5.4%–16.9%
Trans-Verbenol	0.0%–4.2%
Bornyl acetate	0.0%–2.8%
Beta-Elemene	0.0%–2.7%
Sabinene	0.0%–2.6%
Limonene	0.0%–2.4%

Boswellia sacra

Alpha-pinene	5.3%–78.5%
Limonene	5.6%–33.5%
(E)-Beta-Ocimene	0.0%–32.3%
Myrcene	1.0%–8.9%
Alpha-Thujene	0.9%–6.6%
Sabinene	1.1%–5.2%

Para-Cymene	1.6%–2.7%
Beta-Elemene	0.9%–2.6%

OTHER COMPOUNDS: *Boswellia carterii*—Alpha-phellandrene, hexyl acetate, Z-beta-ocimene, E-beta-ocimene 1,8-cineole, linalool, α -pinene epoxide, trans-verbenol, terpinen-4-ol, bornyl acetate, geranyl acetate, cembrene A, cembrene, incensole; *Boswellia frereana*—Camphene, beta-pinene, alpha-phellandrene, m-cymene, 1,8-cineole, gamma-terpinene, trans-sabinene-hydrate, trans-linalool oxide, cis-linalool oxide, linalool, viridiflorol, verbenone, thujanol, carvone, delta-3-carene, alpha-pinocarveol, octyl acetate, alpha-copaene, terpinen-4-ol, myrtenal; *Boswellia sacra*—Beta-pinene, alpha-phellandrene, camphene, beta-myrcene, beta-caryophyllene, terpinen-4-ol, 2-carene, gamma-terpinene, terpinolene, verbenone, linalool, bornyl acetate, delta-3-carene, delta-cadinene, alpha-caryophyllene, campholene aldehyde, octyl acetate, thujol, calamenene, beta-selinene, alpha-selinene, alpha-humulene, 1,8-cineole

REPORTED THERAPEUTIC PROPERTIES: Analgesic (pain relief), **anticancer**, antitumoral, supports reproductive health, **anti-inflammatory**, **anti-aging**, antioxidant, antiseptic, astringent, expels excess gas, **antirheumatic**, aids digestion, encourages cellular rejuvenation and a healthy cell cycle, diuretic, expectorant, immune modulating, **soothes cough**, promotes oral cleanliness, antiarthritic, **aids normal respiration, reduces the appearance of scars and blemishes**, wound healing, supports eye health, sedating, **antidepressant**, reduces anxiety, stress management, encourages emotional healing, **supports meditation and focus**, reduces loneliness, grief, and fear, focuses attention

CAUTIONS:

- May interfere with the enzymes responsible for metabolizing medications (NSAIDs, proton-pump inhibitors, acetaminophen, antiepileptics, immune modulators, blood-sugar medications, blood-pressure medications, antidepressants, antipsychotics, diabetic medications, antihistamines, antibiotics, and anesthetics).[\[824\]](#)

SELECTED EVIDENCE:

- *In vitro* research suggests that *B. carterii* kills bladder (selectively, via oxidative stress) cancer cells.[\[825\]](#),[\[826\]](#)
- *In vitro* and animal research suggests that *B. sacra* causes pancreas cancer cell death.[\[827\]](#)
- *B. sacra* effectively killed three breast cancer cell lines while normal breast cells were more resistant to cellular death caused by frankincense oil *in vitro*.[\[828\]](#)
- Animal research suggests *B. sacra* relieves pain.[\[829\]](#)
- A hand massage with equal parts of frankincense, bergamot, and lavender (as a 1.5 dilution with sweet almond carrier oil) reduced the pain and depression of hospice patients with terminal cancer.[\[830\]](#)
- *B. frereana* prevents the production of proinflammatory molecules that may cause cartilage damage, making it a promising natural remedy for inflammation associated with arthritis.[\[831\]](#)
- *B. carterii* resin provided mild cardiovascular protection during a heart attack in animal research.[\[832\]](#)
- *B. sacra* inhibits several gram-positive and gram-negative bacterium including *B. subtilis*, *M. luteus*, *S. aureus*, *P. aeruginosa*, *K. pneumoniae*, *E. aerogenes*, and *E. coli*.[\[833\]](#)

- Animal research suggests that frankincense oil can reduce the appearance of wrinkles and aging of the skin.[\[834\]](#)
- *In vitro* research suggests that *B. carterii* is an immune modulator and stimulates the transformation (activation of small, resting lymphocytes into large and functional lymphocytes) of lymphocytes.[\[835\]](#)
- A Chinese mixture of four herbs including *B. carteri* promoted wound healing and the prevention of scar formation in rabbits.[\[836\]](#)
- The Korean remedy Hyunamdan (made of heat-processed ginseng, Hangamdan S made of *Cordyceps militaris*, *Panax ginseng radix*, *Commiphora myrrha*, calculus bovis, margarita, *Boswellia carteri*, *Panax notoginseng radix* and *Cremastra appendiculata tuber*) reduced cancerous nodules in the lungs that had metastasized from the bladder in a seventy-four-year-old man.[\[837\]](#)
- Alpha-pinene inhibits the production of interleukins (IL-1), nitric oxide, and proteins (NF-kappa-B) that promote inflammation and protects the breakdown of chondrocytes (cells that make up the healthy cartilage in the body).[\[838\]](#),[\[839\]](#)



GALBANUM

Ferula galbaniflua, *Ferula gummosa*

FAMILY: Apiaceae (Umbelliferae)

NOTE: Top-Middle

AROMA INTENSITY: Medium

AROMA: Woody, spicy, balsamic

COMMON EXTRACTION METHOD: Steam distilled from the resin; also distilled from the fruit and seed

POSSIBLE SUBSTITUTE OILS: Balsam fir, copaiba, white fir

BLENDS WELL WITH: Balsam fir, black spruce, blue spruce, carrot seed, copaiba, geranium, ginger, lavender, pine, rose, silver fir, white fir

RECOMMENDED DILUTION RANGE: 5%–Neat

PRIMARY COMPOUNDS: [\[840\]](#), [\[841\]](#), [\[842\]](#)

Beta-Pinene	45.5%–66.3%
Alpha-pinene	5.4%–36.6%
Beta-Phellandrene	0.1%–22.7%
Delta-3-Carene	0.6%–12.1%
Delta-Cadinene	1.5%–7.2%
Beta-Cubebene	0.0%–4.9%
Epi-Bicyclosiquiphellandrene	0.0%–4.4%
4-Terpineol	0.0%–4.1%

OTHER COMPOUNDS: Alpha-terpinene, alpha-thuyene, beta-myrcene, d-limonene, beta-elemene, (E)-caryophyllene, Germacrene D, alpha-murolene, para-cymene, guaiol, gamma-cadinene, methyl carvacrol, terpinyl acetate, alpha-amorphene, spathulenol, viridiflorol

REPORTED THERAPEUTIC PROPERTIES: Analgesic (pain relief), anti-inflammatory, antiarthritic, **antirheumatic**, antispasmodic, antimicrobial, **aids immune function**, **anti-aging**, antiseptic, **aids circulation**, decongestant, aids detoxification, softens skin, **reduces the appearance of scars and blemishes**, aids the absorption of nutrients, **balances menstruation**, stimulates lymph flow, antiparasitic, wound healing, calming, aids concentration and focus, antidepressant, relieves shock, combats emotional rigidity

CAUTIONS:

- None currently known.

SELECTED EVIDENCE:

- Animal research suggests that galbanum oil reduces intestinal spasms. [\[843\]](#)
 - Galbanum seed oil inhibited *E. coli in vitro*. [\[844\]](#)
 - Galbanum fruit oil remarkably inhibits *S. aureus*, *S. epidermis*, and *B. subtilis*, *E. coli*, *S. typhi*, and *P. aeruginosa*, *C. kefir*, and *C. albicans*. [\[845\]](#) The resin oil also inhibits *S. aureus*, *P. aeruginosa*, *E. coli*, *S. enteritidis*, and *L. monocytogenes*. [\[846\]](#)
-



GERANIUM (Rose Geranium)

Pelargonium graveolens, Pelargonium capitatum, Pelargonium x asperum, Pelargonium radens

FAMILY: Geraniaceae

NOTE: Middle

AROMA INTENSITY: Strong

AROMA: Floral, sweet, fresh, rose-like

COMMON EXTRACTION METHOD: Steam distilled from the leaves and flowers

POSSIBLE SUBSTITUTE OILS: Rose, melissa, vetiver, cistus

BLENDS WELL WITH: Basil, bay laurel, bergamot, carrot seed, cassia, coriander, chamomile (German, Roman), citronella, clary sage, cypress, fennel, galbanum, ginger, grapefruit, juniper, lavender, lemon, lemongrass, lime, melissa, neroli, orange, palmarosa, patchouli, peppermint, tangerine, ravensara, rose, rosemary, spikenard, ylang ylang

RECOMMENDED DILUTION RANGE: 3%–50%; neat for some conditions

PRIMARY COMPOUNDS: [\[847\]](#), [\[848\]](#), [\[849\]](#), [\[850\]](#), [\[851\]](#), [\[852\]](#)

Citronellol	2.4%–45.7%
Geraniol	1.1%–38.4%
Citronellyl Formate	0.0%–18.1%
Linalool	0.3%–16.0%
Menthone	0.3%–16.0%
Trans-Caryophyllene	0.0%–11.0%
IsoMenthone	0.0%–7.9%
Thymol	0.0%–7.8%
Menthone	0.0%–7.3%
10-Epi-Gamma-Eudesmol	0.0%–5.6%
Guaia-6,9-Diene	0.0%–5.4%

OTHER COMPOUNDS: Alpha-pinene, beta-pinene, trans rose oxide, Alpha-Copaene, beta-bourbonene, beta-caryophyllene, beta-cubebene, geranyl, germacrene, octadiene, butanoic acid, alpha-terpineol, 2,6-octadien-1-ol,37-dimethyl, nerol, citral

REPORTED THERAPEUTIC PROPERTIES: Analgesic (pain relief), antibacterial, antidepressant, supports blood-sugar balance, **stimulates lymph flow and drainage**, anti-inflammatory, antiseptic, astringent, **antineuralgic**, antioxidant, diuretic, **cell regeneration**, aids liver function, **balances menstruation**, stops excess bleeding, regenerative, helps bruises heal, **nervine (calms and soothes the nerves)**, wound healing, **reduces the appearance of scars and blemishes**, sedating, antidepressant, promotes a sense of security, stimulates imagination, promotes balanced emotions

CAUTIONS:

- May interfere with the enzymes responsible for metabolizing medications (NSAIDs, proton-pump inhibitors, acetaminophen, antiepileptics, immune modulators, blood-sugar medications, blood-pressure medications, antidepressants, antipsychotics, diabetic medications, antihistamines, antibiotics, and anesthetics).[\[853\]](#)
- May interact with diabetes medications and cause low blood sugar.[\[854\]](#)
- May interact with antibiotics and/or antifungals and possibly increase their effectiveness. [\[855\]](#), [\[856\]](#),[\[857\]](#),[\[858\]](#),[\[859\]](#),[\[860\]](#)
- Dilution recommended for topical application. Geraniol is metabolized and autoxidized into metabolites like geranial and neral and may cause sensitization and irritation when applied topically.[\[861\]](#)

SELECTED EVIDENCE:

- Animal research suggests that geranium oil protects against oxidative testicular damage caused by the xenobiotic insecticide deltamethrin.[\[862\]](#)
- *In vitro* research suggests that geranium oil inhibits *S. enteritidis*, *P. aeruginosa*, *E. coli*, *S. aureus*, and *B. subtilis*.[\[863\]](#)
- *In vitro* research suggests that geranium oil inhibits common pathogens that infect the urinary tract and improves the effectiveness of treating UTIs with ciprofloxacin.[\[864\]](#) It also improves the effectiveness of norfloxacin (a quinolone antibiotic used to treat urinary tract infections),[\[865\]](#) ketoconazole (an antifungal drug used to treat seborrheic dermatitis),[\[866\]](#) and amphotericin B (an antifungal drug used to treat systemic fungal infections).[\[867\]](#) Geranium increases the antibacterial activity of gentamicin (an antibiotic used to treat eye infections) and may reduce the dose of gentamicin required, and therefore its side effects, according to *in vitro* research.[\[868\]](#),[\[869\]](#)
- Geranium oil reduced the viability of two leukemia cancer cell lines *in vitro*.[\[870\]](#)
- Animal research suggests that geranium oil decreases high blood sugar better than glibenclamide (an antidiabetic medication that increases insulin production by the pancreas).[\[871\]](#) The researchers also reported that geranium oil reduces complications of diabetes associated with oxidative stress. Trans-caryophyllene in geranium stimulates the production of insulin by pancreatic beta-cells in response to glucose according to *in vitro* research.[\[872\]](#)
- A 1% geranium oil topical gel improved dental stomatitis (an oral infection of *Candida* or thrush

that causes inflammation of oral mucous membranes that primarily affects denture wearers or those who don't practice appropriate oral care) in 90% of study volunteers.[\[873\]](#)

- Topical application of a combination of lavender, geranium, tea tree, and peppermint oils improved the oral health of hospice patients with terminal cancer.[\[874\]](#)
- Animal research concluded that vaginal washing with geranium oil reduces inflammation and vaginal candidiasis (yeast infection) in mice.[\[875\]](#)
- A foot bath (107°F water) with salts and either oregano, thyme, cinnamon bark, lemongrass, clove, palmarosa, peppermint, lavender, or geranium significantly reduced fungi associated with athlete's foot *in vitro*.[\[876\]](#)
- Geranium oil reduces inflammation by suppressing neutrophil accumulation of fluid retention in the area of inflammation.[\[877\]](#),[\[878\]](#)
- Geranium oil possess good antioxidant properties.[\[879\]](#),[\[880\]](#)
- Citronellol relieves oral and facial pain by modulating central nervous system activity in mice.[\[881\]](#)
- Animal research suggests that citronellol lowers blood pressure by increasing vasodilation (relaxation of the muscular wall and widening of the blood vessels).[\[882\]](#)
- Geranium oil contains the compound 10-epi-gamma-eudesmol, which is considered a natural tick repellent.[\[883\]](#)
- Trans-caryophyllene reduces cerebral inflammation (by modulating the production of pro-inflammatory molecules) and oxidative stress caused by seizures in mice.[\[884\]](#)



GERMAN CHAMOMILE (German Camomile, Blue Chamomile)

Matricaria recutita, Matricaria chamomilla, Chamomilla recutita

FAMILY: Asteraceae (Compositae)

NOTE: Middle

AROMA INTENSITY: Strong

AROMA: Warm, sweet, herbaceous

COMMON EXTRACTION METHOD: Steam distilled from the flowers

POSSIBLE SUBSTITUTE OILS: Roman chamomile, blue tansy, blue cypress, basil (linalool CT), lavender

BLENDS WELL WITH: Bergamot, cassia, cedarwood, eucalyptus, geranium, lavender, neroli, patchouli, pine, ravintsara, rose, silver fir, white fir

RECOMMENDED DILUTION RANGE: 5%–Neat

PRIMARY COMPOUNDS: [\[885\]](#), [\[886\]](#), [\[887\]](#), [\[888\]](#), [\[889\]](#)

Chamazulene	0.7%–61.3%
Bisabolol Oxide A	3.1%–56.0%
Alpha-Bisabolol	0.1%–44.2%
Bisabolol Oxide B	3.9%–27.2%
Cis-Enyne-Bicycloether	8.8%–26.1%
Bisabolone Oxide A	0.5%–24.8%
(Z)-Beta-Farnesene	0.0%–15.9%
(E)-Beta-Farnesene	2.3%–14.0%
Isopropyl Hexadecanoate	0.0%–12.7%
(E,E)-Farnesol	0.0%–6.9%
(E)-Beta-Farnesol	0.0%–5.2%
Decanoic Acid	0.1%–5.1%
Spathulenol	1.7%–4.8%

Note: German chamomile composition varies widely based on growing environment. Estonian samples are predominant in bisabolol oxide A; Moldovan, Russian, and Czech Republic samples are predominant in bisabolol oxide A and chamazulene; Armenian samples are predominant in bisabolol oxide B and chamazulene; German samples are predominant in alpha-bisabolol, and Himalayan samples are predominant in bisabolol oxide A and (E)-beta-farnesene.

OTHER COMPOUNDS: Artemisia ketone, alpha-eudesmol, geranyl tiglate, gamma-murolene, germacrene D

REPORTED THERAPEUTIC PROPERTIES: Analgesic (pain relief), **anti-inflammatory**, **muscle relaxant**, **antispasmodic**, antibacterial, antioxidant, **expels excess gas**, reduces fever, **antirheumatic**, antiallergenic, **anti-arthritic**, stimulates liver and gallbladder function, **antineuralgic**, antiseptic, antidepressant, **antifungal**, eases nausea, **relieves colic**, **reduces the appearance of scars and blemishes**, **reduces painful men-struation**, nervine (calms and soothes the nerves), **aids digestion**, wound healing, calming, sedating, helps eliminate anger and frustration, **stress management**, reduces anxiety, **reduces tantrums**

CAUTIONS:

- May interfere with the enzymes responsible for metabolizing medications (NSAIDs, proton-pump inhibitors, acetaminophen, antiepileptics, immune modulators, blood-sugar medications, blood-pressure medications, antidepressants, antipsychotics, diabetic medications,

antihistamines, antibiotics, and anesthetics).[\[890\]](#)

- May interact with aspirin, blood-pressure, antiplatelet, and anticoagulant medications, and increase the risk of bleeding among people with bleeding disorders.[\[891\]](#),[\[892\]](#),[\[893\]](#)

SELECTED EVIDENCE:

- A medical hypothesis concluded that German chamomile was an effective natural option for migraine headache relief based on its neuroprotective and anti-inflammatory effects.[\[894\]](#)
- A small observational study concluded that German chamomile is slightly effective for some symptoms (hyperactivity, inattention, and immaturity) of attention-deficit hyperactivity disorder (ADHD).[\[895\]](#)
- *In vitro* research suggests that German chamomile strongly inhibits the growth of colon carcinoma cells through disrupting DNA replication (inhibits DNA polymerase alpha and beta).[\[896\]](#)
- German chamomile oil killed two myeloid leukemia cell lines *in vitro*.[\[897\]](#)
- German chamomile inhibits mast cell degranulation (when mast cells degranulate they rapidly release proinflammatory molecules like histamine and TNF-alpha), which is beneficial to a number of allergic responses and conditions.[\[898\]](#)
- Animal research suggests that German chamomile kills the parasitic worm anisakis that infects the stomach and intestines and causes abdominal pain, nausea, intestinal obstruction, and intestinal tract damage.[\[899\]](#)
- German chamomile has stronger antioxidant activity than vitamin C, vitamin E, and the synthetic antioxidant butylated hydroxytoluene (BHT).[\[900\]](#)
- Animal research suggests that German chamomile calms an increased sensitivity to pain (hyperalgesia) and reduces edema caused by inflammatory conditions (through reduced histamine response).[\[901\]](#)
- Alpha-bisabolol decreases pain and excess inflammation by decreasing leukocyte activity, TNF-alpha production, and neutrophil degranulation (a common feature of inflammatory disorders) in rodents.[\[902\]](#)
- German chamomile helps decrease inflammation by moderately inhibiting the 5-lipoxygenase (5-LOX) enzyme that is involved in the inflammation response according to *in vitro* research.[\[903\]](#)
- *In vitro* research suggests that German chamomile prevents oxidative DNA damage to reproductive cells in mice.[\[904\]](#)
- Animal research suggests that alpha-bisabolol protects the gastrointestinal system against ulcers caused by ethanol and indomethacin (an NSAID).[\[905\]](#)
- German chamomile prevented the mutagenic (the ability to cause changes in genetic material) action of daunorubicin (a chemotherapeutic drug used to treat lymphocytic and myelocytic leukemias) and methyl methanesulfonate (an alkylating and cancer-causing agent) in mouse bone marrow.[\[906\]](#)
- Alpha-bisabolol inhibits *L. infantum*, which makes it a promising natural remedy for leishmaniasis (a disease caused by protozoan parasites characterized by skin sores (cutaneous) or organ dysfunction (visceral)).[\[907\]](#)
- *In vitro* research suggests that German chamomile is highly active against herpes simplex virus type 1 (HSV-1) and prevents the virus from attaching to cells.[\[908\]](#)
- *In vitro* research suggests that German chamomile inhibits herpes simplex virus type 2 (HSV-2)

by interacting with the viral envelope (a lipid bilayer that surrounds the virus and contains proteins that allow the virus to bind to healthy cells).[\[909\]](#) This activity makes it a promising natural remedy for the treatment for genital herpes.

- Oral administration of German chamomile essential oil or ethyl acetate extract demonstrated that it possesses antipruritic properties (itching caused by sunburn, allergic reactions, chronic skin conditions, insect bites, and microorganism infection) in mice.[\[910\]](#)
 - *In vitro* research suggests that German chamomile oil inhibits various streptococci strains (*S. mutans*, *S. salivarius*, *S. faecalis*, and *S. sanguis*) in low concentrations.[\[911\]](#)
 - *In vitro* research discovered that German chamomile oil inhibited *H. pylori* growth (a bacterium strongly associated with stomach ulcers) at extraordinarily low concentrations.[\[912\]](#)
 - German chamomile oil reduces excess inflammation by modulating leukocyte chemotaxis (the movement of leukocytes from the blood to tissues, which causes increased inflammation).[\[913\]](#) Leukocytes travel to the site of damaged tissue to encourage tissue repair; however, when they migrate excessively to the area it causes an abnormal inflammatory response.
 - *In vitro* and animal research suggests that German chamomile accelerated the wound-healing process.[\[914\]](#)
 - Alpha-bisabolol triggers the internal apoptotic (self-destruction) process of glioma (a tumor that begins in the supportive tissue of the brain) cancer cells *in vitro*.[\[915\]](#)
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GINGER

Zingiber officinale

FAMILY: Zingiberaceae

NOTE: Middle-Base

AROMA INTENSITY: Medium

AROMA: Earthy, woody, sweet, warm

COMMON EXTRACTION METHOD: Steam distilled from the rhizomes

POSSIBLE SUBSTITUTE OILS: Turmeric, melissa

BLENDS WELL WITH: Bay laurel, bergamot, camphor, cardamom, carrot seed, cassia, cedarwood, clove, coriander, eucalyptus, fennel, frankincense, galbanum, geranium, grapefruit, lemon, lime, neroli, nutmeg, orange, oregano, patchouli, ravensara, rose, sandalwood, tangerine, turmeric, vetiver

RECOMMENDED DILUTION RANGE: 3%–50%; neat for some conditions

PRIMARY COMPOUNDS: [\[916\]](#), [\[917\]](#), [\[918\]](#), [\[919\]](#), [\[920\]](#), [\[921\]](#), [\[922\]](#)

Zingiberene	5.7%–32.2%
Geranial	1.2%–20.1%
Geranyl Acetate	0.0%–18.8%
Beta-Sesquiphellandrene	1.9%–18.4%
ar-Curcumene	1.9%–16.7%
(E)-Beta-Farnesene	0.0%–14.7%
Geraniol	0.0%–14.5%
ar-Turmerone	0.0%–12.8%
Camphene	0.6%–12.7%
1,8-Cineole	0.2%–10.9%
Neral	2.6%–9.4%
Beta-Bisabolene	0.0%–7.8%
(E,E)-Alpha-Farnesene	0.0%–7.0%
Borneol	0.0%–5.6%
Linalool	0.0%–4.8%
Beta-Phellandrene	0.2%–4.3%

OTHER COMPOUNDS: Alpha-pinene, sabinene, octenal, alpha-phellandrene, delta-3-carene, alpha-terpinene, para-cymene, d-limonene, gamma-terpinene, alpha-copaene, citronellal, camphor, alpha-terpineol, nerol, carveol, 2-undecanone, neryl acetate, delta-elemene, alpha-bergamotene, germacrene D, alpha muurolene, delta-cadinene, Z-nerolidol, elemol, eudesma-3,7(11)-diene, E-nerolidol, cubenol, beta-guaiacol, sesquisabinene hydrate, zingerone, alpha-curcumene, beta-curcumene, alpha-muurolol, beta-bisabolol, eudesma-7(11)-en-4-ol, Z-alpha-bergamotol, Z,Z-farnesol, Z,E-farnesol, E,E-farnesol, (Z)-lanceol

REPORTED THERAPEUTIC PROPERTIES: Analgesic (pain relief), **bronchodilator**, anticancer, **anti-inflammatory**, antispasmodic, antineuralgic, antibacterial, antioxidant, antiseptic, aphrodisiac, astringent, **expels excess gas**, relieves menstrual cramps, **eases nausea and vomiting**, aids normal respiration, **aids digestion**, diuretic, expectorant, **relieves constipation and diarrhea**, eases sports injuries, aids circulation, stimulating, promotes courage and motivation, encourages feelings of balance and stability, reduces mental fatigue

CAUTIONS:

- May interact with aspirin, blood-pressure, antiplatelet, and anticoagulant medications, and increase the risk of bleeding among people with bleeding disorders. [\[923\]](#), [\[924\]](#)
- May interfere with the enzymes responsible for metabolizing medications (NSAIDs, proton-pump inhibitors, acetaminophen, antiepileptics, immune modulators, blood-sugar medications,

blood-pressure medications, antidepressants, antipsychotics, diabetic medications, antihistamines, antibiotics, and anesthetics).[\[925\]](#)

- Theoretically ginger may be mildly photosensitizing due to curcumanoid content, though this is highly unlikely (very, very low risk).[\[926\]](#),[\[927\]](#),[\[928\]](#)

SELECTED EVIDENCE:

- A twice weekly, thirty-minute ginger oil massage (for five weeks total) significantly reduced low back pain and disability (both long- and short-term effectiveness) among 140 study participants.[\[929\]](#)
- Massaging ginger and orange oil to the knees of older adults six times over a three week period relieved moderate-to-severe knee pain and increased physical function in the short-term.[\[930\]](#)
- Ginger oil modulates enzymatic activity to prevent genetic damage and cancer caused by carcinogens in rats.[\[931\]](#)
- Ginger oil triggers bronchodilation (dilates the bronchi and bronchioles to improve airflow to the lungs) possibly by stimulating the beta-adrenergic receptor, which improves breathing in people with chronic respiratory diseases.[\[932\]](#)
- Ginger oil reduced the production of proinflammatory compounds released during respiratory infections *in vitro*.[\[933\]](#)
- *In vitro* and animal research discovered that ginger oil reduces inflammation by preventing the migration of excess leukocytes from the blood to tissues.[\[934\]](#) Leukocytes travel to the site of damaged tissue to encourage tissue repair; however, when they migrate excessively to the area it causes an abnormal inflammatory response.
- Animal research suggests ginger oil modulates the immune system, influences cell-mediated immune responses, enhances T lymphocyte production, and restores humoral immune responses after drug-induced immunosuppression.[\[935\]](#),[\[936\]](#),[\[937\]](#) Another study concluded that ginger oil improves immune system activity (lymphocyte numbers) among people who are receiving chemotherapy.[\[938\]](#)
- An aromatic bath with ginger oil may shorten the second stage of maternal labor by accelerating contractions, increasing cervical dilation, and decreasing pain.[\[939\]](#)
- Ginger oil may significantly prevent DNA from bonding to a cancer-causing chemicals (DNA adduct formation) and therefore help prevent cancer.[\[940\]](#)
- Inhalation of ginger oil may reduce the frequency and severity of nausea and vomiting, and the need for drugs used to treat nausea and vomiting.[\[941\]](#) Another study concluded that inhalation of ginger alone or in combination with spearmint, peppermint, and cardamom (three deep inhalations) from a gauze pad following surgery reduced nausea and requirements for medications to reduce nausea and vomiting.[\[942\]](#)
- Low doses of ginger and lemon oil prevented lipid peroxidation of the membranes and the premature destruction (hemolysis) of red blood cells in mice.[\[943\]](#) The same researchers discovered that ginger and lemon oil prevent lipid peroxidation of the brain and liver.
- *In vitro* research discovered that ginger oil prevents HSV-2 infection of healthy cells at an effective rate greater than 90%, and it was highly selective (kill bacteria without harming host cells).[\[944\]](#) Another study determined that ginger oil possesses high levels of activity against both drug-resistant and non-drug-resistant HSV-1.[\[945\]](#)
- Ginger oil significantly reduces stomach ulcers (up to 85.1%) caused by ethanol in rodents

(rats).[\[946\]](#)

- Animal research suggests that oral administration of ginger oil protects the liver and reverses fatty liver caused by alcohol.[\[947\]](#)
 - Ginger oil significantly reduces both spontaneous and PGF2alpha-induced uterine contractions in rats.[\[948\]](#) PGF2-alpha is a natural prostaglandin that stimulates uterine contractions, and as a pharmaceutical (dinoprost) is used to induce abortions in animals.
 - *In vitro* research discovered that ginger oil inhibited *H. pylori* growth (a bacterium strongly associated with stomach ulcers) in extraordinarily low concentrations.[\[949\]](#)
 - A number of compounds in ginger (beta-pinene, terpinolene, alpha-phellandrene, and alpha-copaene) inhibit the 5-HT3 receptor channel system and reduce intestinal spasms in rats.[\[950\]](#) Drugs that inhibit this receptor channel system help reduce nausea and vomiting, and treat irritable bowel syndrome, fibromyalgia, anxiety, substance abuse, eating disorders, and neurological disorders.
 - Animal research suggests that acetone extracts of ginger, which contain volatile oils, increases the speed at which food moves from the gastrointestinal system (gastrointestinal motility) similar to a drug used to treat gastroesophageal reflux disease (metoclopramide) and domperidone (a drug used to increase peristalsis).[\[951\]](#)
 - A mixture of honokiol, magnolol, and ginger oil reduced depressive symptoms in rats by regulating serotonin production.[\[952\]](#),[\[953\]](#)
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GOLDENROD

Solidago canadensis

FAMILY: Asteraceae (Compositae)

NOTE: Middle

AROMA INTENSITY: Medium

AROMA: Herbaceous, floral, slightly sweet, green

COMMON EXTRACTION METHOD: Steam distilled from the flowering tops

POSSIBLE SUBSTITUTE OILS: Ylang ylang, marjoram

BLENDS WELL WITH: Black spruce, blue spruce, copaiba, ginger

RECOMMENDED DILUTION RANGE: 3%–33%; 50% for some conditions

PRIMARY COMPOUNDS: [\[954\]](#), [\[955\]](#), [\[956\]](#), [\[957\]](#), [\[958\]](#), [\[959\]](#)

Germacrene D 28.4%–69.7%

Beta-Cubebene 20.5%–26.9%

Alpha-pinene 0.0%–13.8%

D-Limonene 0.2%–12.5%

Beta-Pinene 0.0%–9.3%

Bornyl acetate 2.1%–9.2%

OTHER COMPOUNDS: Sabinene, alpha-phellandrene, benzene acetaldehyde, delta-elemene, beta-elemene, beta-caryophyllene, beta-gurjunene, alpha-humulene, delta-cadinene, elemol, 1-epi-cubenol, epi-alpha-cadinol, beta-eudesmol, selin-11-en-4-alpha-ol

REPORTED THERAPEUTIC PROPERTIES: Diuretic, anti-inflammatory, **aids circulation**, **vasodilator**, supports liver function, **anti-infectious**, antiallergenic, antiseptic, expectorant, decongestant, supports lymph circulation, helps prevent kidney stones, **supports cardiovascular and urinary tract health**, soothes cough, wound healing, relaxing, calming

CAUTIONS:

- None currently known.

SELECTED EVIDENCE:

- Goldenrod inhibited the growth and promoted the destruction of liver carcinoma, stomach, and cervical cancer cells, and mildly inhibited skin, breast, and a second liver cancer cell line *in vitro*. [\[960\]](#), [\[961\]](#)
 - *In vitro* research concluded that goldenrod oil significantly inhibits *E. faecalis* (formerly known as *S. faecalis*) and *E. coli*, and moderately inhibits *C. albicans*. [\[962\]](#), [\[963\]](#)
 - Goldenrod oil is considered a natural pesticide. [\[964\]](#), [\[965\]](#), [\[966\]](#)
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GRAPEFRUIT

Citrus paradisi, Citrus paradisi

FAMILY: Rutaceae

NOTE: Top

AROMA INTENSITY: Medium

AROMA: Citrusy, fresh, clean, slightly bitter

COMMON EXTRACTION METHOD: Cold-pressed/expressed or hydrodistilled from the fruit peel (rind)

POSSIBLE SUBSTITUTE OILS: Lemon, orange, bergamot, tangerine, lime

BLENDS WELL WITH: Bergamot, black pepper, cardamom, cassia, chamomile (German, Roman), citronella, clary sage, clove, coriander, cypress, eucalyptus, fennel, frankincense, geranium, ginger, juniper, lavender, lemon, lemon verbena, lime, orange, neroli, patchouli, peppermint, petitgrain, ravensara, rosemary, Spanish sage, tangerine, thyme, ylang ylang

RECOMMENDED DILUTION RANGE: 3%–50%; neat for some conditions

PRIMARY COMPOUNDS: [\[967\]](#), [\[968\]](#), [\[969\]](#), [\[970\]](#), [\[971\]](#), [\[972\]](#), [\[973\]](#)

Cold-pressed/expressed

Limonene 86.3%–95.3%

Beta-Myrcene 1.6%–6.3%

Distilled

Limonene 70.9%–88.6%

Nootkatone 0.0%–8.5%

Beta-Myrcene 3.5%–7.3%

OTHER COMPOUNDS: *Cold pressed/expressed*—Beta-caryophyllene, alpha-pinene, beta-pinene, linalool, alpha-terpinene, alpha-cubebene, octanal, decanal, beta-phellandrene, tetradecane, citronellol, delta-cadinene; *Distilled*—Alpha-pinene, beta-phellandrene, octanal, linalool, decanol, copaene, tetradecane, caryophyllene, delta-cadinene, phthalate

REPORTED THERAPEUTIC PROPERTIES: Antibacterial, antiseptic, antioxidant, **reduces excess fluid**

retention, appetite balancer, supports healthy lymphatic function, astringent, aids digestion, decongestant, diuretic, **weight management**, strengthens nails, immune supportive, **aids detoxification**, reduces the appearance of blemishes, restorative, stimulating, stress management, antidepressant, energizing, reduces fear

CAUTIONS:

- May be mildly photosensitizing. Avoid sun exposure to area of application for at least twelve hours after topical application. Grapefruit essential oil contains very small amounts of the photosensitizing compounds bergapten, bergamottin, and epoxy-bergamottin.[\[974\]](#),[\[975\]](#),[\[976\]](#),[\[977\]](#),[\[978\]](#)
- A very common question is whether grapefruit essential oil interferes with medications like grapefruit juice. The juice contains considerable amounts of furanocoumarin derivatives (bergamottin, bergapten, and dihydroxybergamottin) and flavonoids, which significantly interfere with enzymes that metabolize medications.[\[979\]](#),[\[980\]](#) While grapefruit essential oil contains bergapten, bergamottin, and epoxybergamottin (flavonoids are not present in the oil), they are in very small amounts and are weak inhibitors of enzymes. It is highly unlikely that grapefruit oil will interfere with the enzymes responsible for metabolizing medications (NSAIDs, proton-pump inhibitors, acetaminophen, antiepileptics, immune modulators, blood-sugar medications, blood-pressure medications, antidepressants, antipsychotics, diabetic medications, antihistamines, antibiotics, and anesthetics).[\[981\]](#),[\[982\]](#),[\[983\]](#),[\[984\]](#)

SELECTED EVIDENCE:

- Grapefruit oil causes the destruction of cancer cells (apoptosis) *in vitro*.[\[985\]](#)
 - A sitz bath with or a soap application with lavender, myrrh, neroli, rose, grapefruit, mandarin, orange, and Roman chamomile improves healing of the perineum following delivery and episiotomy.[\[986\]](#)
 - *In vitro* research suggests that grapefruit oil may be useful for weight management because it reduces the formation of adipocytes (cells that specialize in the storage of fats).[\[987\]](#) Animal research also suggests that inhalation of grapefruit oil decreases appetite and causes an increase in plasma glycerol levels, which indicates that fats have been mobilized from stores for use as energy (adipocyte lipolysis).[\[988\]](#),[\[989\]](#) Decreased adipocyte lipolysis is associated with obesity.
 - Grapefruit oil reduces elastase activity (an enzyme involved in the breakdown of elastin) *in vitro*, which may help prevent wrinkles and aging of the skin.[\[990\]](#) Elastin helps keep skin tight, supple, and flexible.
 - *In vitro* research concluded that grapefruit oil inhibits *S. aureus*, *E. faecalis*, *S. epidermis*, *E. coli*, *S. typhimurium*, *S. marcescens*, and *P. vulgaris*.[\[991\]](#)
 - Inhaling the aroma of grapefruit oil for ten minutes increased blood pressure in rats.[\[992\]](#)
-



HELICHRYSUM (Immortelle, Everlasting)

Helichrysum italicum, *Helichrysum angustifolium*

FAMILY: Asteraceae (Compositae)

NOTE: Middle-Base

AROMA INTENSITY: Medium

AROMA: Rich, sweet, floral, earthy

COMMON EXTRACTION METHOD: Steam distilled from the flowering plant

POSSIBLE SUBSTITUTE OILS: Cypress, cistus, frankincense

BLENDS WELL WITH: Bergamot, chamomile (German, Roman), clary sage, clove, cypress, geranium, grapefruit, lavender, lemon, lime, melaleuca (tea tree), neroli, orange, oregano, rosemary, tangerine, vetiver, ylang ylang

RECOMMENDED DILUTION RANGE: 3%–50%; neat for some conditions

PRIMARY COMPOUNDS: [\[993\]](#), [\[994\]](#), [\[995\]](#), [\[996\]](#), [\[997\]](#), [\[998\]](#), [\[999\]](#), [\[1000\]](#), [\[1001\]](#)

Helichrysum italicum

Gamma-Curcumene	2.3%–22.5%
Alpha-pinene	9.3%–21.7%
Neryl Acetate	1.4%–11.5%
Nootkatone	0.0%–11.1%
Alpha-Cedrene	0.0%–9.6%
Italicene	0.0%–7.1%
Beta-Selinene	2.0%–6.9%
1,7-Di-Epi-Alpha-Cedrene	0.0%–6.8%
Thymol	0.0%–5.4%
Italidione	0.0%–5.1%
Beta-Caryophyllene	2.0%–5.0%

Alpha-Selinene	0.0%–4.8%
<i>Helichrysum italicum</i> ssp. <i>Italicum</i> (Neryl acetate CT)	
Neryl Acetate	5.6%–45.9%
4,6,9-Trimethyldec-8-en-3,5-dione	0.3%–19.8%
Neryl Propionate	3.0%–16.4%
Gamma-Curcumene	0.8%–12.9%
Nerol	1.4%–12.8%
4,6-Dimethyloctan-3,5-dione	0.0%–11.3%
4-Methylhexan-3-one	0.0%–10.5%
Limonene	0.2%–10.4%
Alpha-pinene	0.1%–8.6%
2-Methylpentan-3-one	0.0%–8.2%
2,4,6,9-Tetramethyldec-8-en-3,5-dione	0.0%–8.0%
Eudesmen-5-en-11-ol	1.1%–5.8%
ar-Curcumene	0.9%–4.6%

<i>Helichrysum italicum</i> G. Don ssp. <i>microphyllum</i>	
Neryl Acetate	16.9%–56.1%
Eudesmen-5-en-11-ol	3.7%–23.5%
Rosifoliol	0.0%–20.2%
Gamma-Curcumene	0.8%–18.2%
Beta-Selinene	6.6%–17.1%
Neryl Propionate	1.5%–16.4%
Linalool	0.0%–14.9%
Nerol	3.7%–14.4%
Dihydro-Occidentalol	7.6%–12.2%
Alpha-Selinene	3.8%–5.4%
Italicene	1.4%–5.1%

OTHER COMPOUNDS: *Helichrysum italicum* —Caryophyllene oxide, limonene, selina-4,11-diene, alpha-copaene, (Z)-alpha-bergamotene, (E)-alpha-bergamotene; *Helichrysum italicum* ssp. *Italicum* —Alpha-fenchene, beta-pinene, 1,8-cineole, gamma-terpinene, linalool, nerol oxide, terpinen-4-ol, alpha-terpineol; *Helichrysum italicum* G. Don ssp. *Microphyllum*— 4,6-Dimethyloctan-3,5-dione, alpha-terpineol, lavandulyl acetate, carvacrol, (Z)-alpha-bergamotene, (E)-alpha-bergamotene, ar-curcumene, Geranyl butanoate, guaiol, beta-eudesmol, alpha eudesmol, arzanol

REPORTED THERAPEUTIC PROPERTIES: Antibacterial, **reduces the appearance of scars**, anti-inflammatory, **analgesic (pain relief)**, antimicrobial, antioxidant, antispasmodic, antiallergenic, antifungal, astringent, diuretic, aids detoxification, **supports liver function**, moisturizes the skin, **helps relieve chronic skin conditions**, expectorant, supports spleen function, aids red blood cell production, encourages cell health, **strengthens the circulatory system, wound healing, nerve (calms and soothes the nerves)**, reduces fever, helps bruises heal, **helps clear blood clots**, stress

management, antidepressant, emotionally balancing, stimulating, promotes creativity, helps relieve emotional trauma, fosters forgiveness

CAUTIONS:

- None currently known.

SELECTED EVIDENCE:

- Helichrysum oil significantly reverses multi-drug-resistance of *E. aerogenes*, *E. coli*, *P. aeruginosa*, and *A. baumannii* *in vitro*.[\[1002\]](#)
 - *In vitro* research suggests that arzanol from helichrysum (*microphyllum* subspecies) reduces inflammation (through inhibiting the production of proinflammatory cytokines) and prevents HIV-1 replication.[\[1003\]](#)
 - Helichrysum reduces inflammation through multiple pathways (reduced proinflammatory enzyme activity, enhanced free-radical-scavenging activity, and corticoid steroid-like properties) according to *in vitro* research.[\[1004\]](#) Another study determined that helichrysum moderately inhibits 5-LOX activity (an proinflammatory enzyme).[\[1005\]](#)
 - Inhalation of a combination of peppermint, basil, and helichrysum oils reduced mental exhaustion and moderate burnout in a small pilot study.[\[1006\]](#)
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JUNIPER BERRY

Juniperus communis, *Juniperus communis* ssp. *alpina*, *Juniperus alpina*, *Juniperus canadensis* Lodd. Ex Burgsd.

FAMILY: Cupressaceae (Coniferae)

NOTE: Middle

AROMA INTENSITY: Medium

AROMA: Fresh, slightly balsamic, sweet, woody

COMMON EXTRACTION METHOD: Steam distilled from the berries

POSSIBLE SUBSTITUTE OILS: Frankincense, blue cypress (leaves), pine, blue spruce

BLENDS WELL WITH: Balsam fir, bay laurel, cajeput, cedarwood, clary sage, copaiba, cypress, grapefruit, lavender, lemon, lime, niaouli, orange, petitgrain, pine, ravintsara, rosemary, spikenard, tangerine, turmeric, silver fir, white fir

RECOMMENDED DILUTION RANGE: 3%–33%; 50% for some conditions

PRIMARY COMPOUNDS: [\[1007\]](#), [\[1008\]](#), [\[1009\]](#), [\[1010\]](#), [\[1011\]](#)

Berries

Alpha-pinene	18.3%–62.3%
Beta-Myrcene	2.9%–26.5%
Sabinene	2.8%–11.8%
Germacrene D	1.1%–9.6%
Gamma-Elemene	0.1%–6.4%
Terpinen-4-ol	0.1%–6.3%
Beta-Pinene	1.7%–5.4%
Limonene	2.9%–5.1%
Alpha-Humulene	1.3%–4.6%
Germacrene D-4-ol	0.0%–4.4%

Needles

Limonene	2.8%–53.9%
Alpha-pinene	1.4%–45.6%
Sabinene	0.2%–33.6%
Beta-Phellandrene	3.7%–25.2%
Beta-Caryophyllene	0.8%–10.3%
Germacrene D	3.0%–7.8%
Beta-Myrcene	6.5%–6.9%
Alpha-Humulene	0.8%–6.2%

OTHER COMPOUNDS: *Berries*—Alpha-thujene, camphene, para-cymene, beta-phellandrene, cis-verbenol; *Needles*—Alpha-thujene, beta-pinene, myrcene, delta-2-carene, delta-3-carene, alpha-terpinene, para-cymene, 1,8-cineole, gamma-terpinene, terpinolene, terpinen-4-ol, alpha-terpineol, citronellyl acetate, gamma-cadinene, delta-cadinene, (E)-nerolidol, beta-caryophyllene oxide, humulene oxide, T-cadinol, alpha-cadinol

REPORTED THERAPEUTIC PROPERTIES: Analgesic (pain relief), antimicrobial, **antiarthritic**, antiseptic, antispasmodic, antirheumatic, **reduces excess fluid retention**, antioxidant, astringent, **supports urinary tract health**, helps relieve chronic skin conditions, aids digestion, diuretic, **helps reduce kidney stones**, helps relieve painful menstruation, **supports pancreas function**, reduces the appearance of blemishes, **clears the body of uric acid**, **stimulates liver and gallbladder function**, sedating, encourages feelings of love, relieves feelings of being overwhelmed, combats worrisome

thoughts and negative thinking, diminishes guilt

CAUTIONS:

- Some aromatherapy texts suggest that juniper should be avoided with serious kidney disorders because it may irritate the kidneys. However, scientific research to support this assertion is unconvincing, and in fact suggests that juniper protects the kidneys and supports kidney function. [\[1012\]](#),[\[1013\]](#),[\[1014\]](#)
- May interact with diuretic drugs and promote increased production of urine according to animal research.[\[1015\]](#)
- May interact with diabetic medications and promote low blood sugar according to animal research that used ethanolic extracts.[\[1016\]](#)

SELECTED EVIDENCE:

- Juniper oil reduces elastase activity (an enzyme involved in the breakdown of elastin) *in vitro*, which may help prevent wrinkles and aging of the skin.[\[1017\]](#) Elastin helps keep skin tight, supple, and flexible.
 - Juniper oil prevents protein glycation, which plays a key role in diabetes and its cardiovascular complications.[\[1018\]](#)
 - *In vitro* research suggests that juniper oil inhibits *S. aureus* and *P. aeruginosa*. The authors concluded that inhalation of juniper oil may be useful for chronic and/or recurrent upper respiratory tract infections.[\[1019\]](#)
 - Juniper oil inhibits several dermatophyte (fungi that require keratin for growth and typically infect the skin, hair, and nails) and *Candida* species *in vitro*.[\[1020\]](#),[\[1021\]](#)
 - Juniper berry oil helps decrease inflammation by moderately inhibiting the 5-lipoxygenase (5-LOX) enzyme that is involved in the inflammation response according to *in vitro* research.[\[1022\]](#)
 - *In vitro* research suggests that juniper oil prevents lipid peroxidation and possess antioxidant properties.[\[1023\]](#)
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LAVANDIN

Lavandula x hybrida, Lavandula x intermedia

FAMILY: Lamiaceae (Labiatae)

NOTE: Middle-Top

AROMA INTENSITY: Strong

AROMA: Fresh, floral, strongly herbaceous

COMMON EXTRACTION METHOD: Steam distilled from the fresh flowering tops

POSSIBLE SUBSTITUTE OILS: Lavender, spike lavender, neroli, basil (linalool CT)

BLENDS WELL WITH: Bergamot, camphor, cedarwood, clary sage, clove, cinnamon, citronella, cypress, grapefruit, lavender, lemon, lime, niaouli, orange, patchouli, pine, ravensara, sandalwood, Spanish sage, tangerine, thyme

RECOMMENDED DILUTION RANGE: 3%–50%; neat for some conditions

PRIMARY COMPOUNDS: [\[1024\]](#), [\[1025\]](#), [\[1026\]](#), [\[1027\]](#), [\[1028\]](#), [\[1029\]](#)

Lavandin Abrialis

Linalool	19.6%–39.6%
Linalyl Acetate	18.6%–28.0%
Camphor	8.2%–12.2%
1,8-Cineole	6.7%–10.4%
(E)-Beta-Ocimene	4.0%–5.5%
Borneol	2.4%–3.7%

Lavandin Dutch

Linalool	42.5%–47.0%
Sabinene	0.0%–16.7%
1,8-Cineole	0.0%–15.6%

Camphor	10.0%–12.5%
Linalyl Acetate	4.5%–11.7%
Borneol	3.3%–6.0%

Lavandin Giant

Linalool	34.9%–45.7%
1,8-Cineole	0.0%–26.1%
Sabinene	0.0%–16.9%
Borneol	7.6%–10.1%
Camphor	5.3%–8.4%
Linalyl Acetate	3.8%–4.4%

Lavandin Grosso

Linalyl Acetate	26.2%–36.7%
Linalool	25.7%–35.5%
1,8-Cineole	4.0%–10.2%
Camphor	5.9%–8.8%
Terpinen-4-ol	1.5%–3.9%
Borneol	1.6%–3.6%
Lavandulyl Acetate	1.6%–2.9%

Lavandin Super

Linalyl Acetate	20.4%–45.0%
Linalool	23.0%–41.8%
1,8-Cineole	0.0%–15.9%
Camphor	0.0%–11.4%
Terpinen-4-ol	1.0%–6.7%
Sabinene	0.0%–6.5%
Borneol	1.3%–5.5%
Sabinene Hydrate	0.0%–4.6%

OTHER COMPOUNDS: Myrcene, limonene, butanoic acid hexyl ester, neryl acetate, farnesene, nerol, crypton, alpha-terpineol, geraniol, nonadecane, heneicosane, beta-pinene, 1-octen-4-ol, geranyl acetate, benzaldehyde, cadinol, alpha-pinene, caryophyllene, bisabolol

REPORTED THERAPEUTIC PROPERTIES: Analgesic (pain relief), wound healing, supports normal menstruation, **antiseptic**, expectorant, **antispasmodic**, antifungal, antiviral, antibacterial, insect repellent, aids normal respiration, reduces the appearance of scars and blemishes, antidepressant, stress management, **reduces anxiety**, helps one overcome shock, calming, relaxing

CAUTIONS:

- Use cautiously with children under 6 due to potentially high camphor and 1,8-cineole content. Several cases of camphor poisoning and/or seizures from ingestion and topical application have

been reported in children.[\[1030\]](#),[\[1031\]](#) Ingestion of camphor-containing products has been lethal in children under age 2.[\[1032\]](#) Children 5 years and up may use camphor-containing essential oils topically in dilutions no stronger than 5%. 1,8-cineole may cause seizures, central nervous system problems, or respiratory distress in young children.[\[1033\]](#),[\[1034\]](#),[\[1035\]](#)

- Caution is warranted during pregnancy and while lactating due to potentially high camphor content. Ingestion of essential oils with significant levels of camphor may lead to abortion because fetuses lack the enzymes to process it.[\[1036\]](#) Camphor ingestion by infants and young children may cause cough, vomiting, seizure, burning sensation in the mucous membranes and eyes, or lack of voluntary coordination of muscle movements.[\[1037\]](#)
- Avoid with epilepsy and Parkinson's due to potentially high camphor and 1,8-cineole content.[\[1038\]](#),[\[1039\]](#),[\[1040\]](#)
- The camphor content in lavandin may negatively impact red blood cells and increase the risk of jaundice in children with Glucose-6-phosphate dehydrogenase deficiency (G6PD). [\[1041\]](#),[\[1042\]](#)
- Oral—Essential oils with significant levels of camphor and 1,8-cineole can be toxic when taken orally. As few as 4 to 5 drops of high 1,8-cineole oils may be problematic in very sensitive individuals. Camphor can be toxic when taken orally (usually single doses exceeding 2 ml), although the lethal dose for humans is estimated to be more than 5 ml in a single dose.[\[1043\]](#),[\[1044\]](#),[\[1045\]](#),[\[1046\]](#),[\[1047\]](#),[\[1048\]](#),[\[1049\]](#),[\[1050\]](#),[\[1051\]](#)
- May interact with aspirin, blood-pressure, antiplatelet, and anticoagulant medications, and increase the risk of bleeding among people with bleeding disorders.[\[1052\]](#)
- Avoid with those who have a compromised liver due to the risk of increased liver enzymes and liver damage.[\[1053\]](#)
- May interfere with pentobarbital and other barbiturates (medications for anxiety and insomnia) based on 1,8-cineole content.[\[1054\]](#),[\[1055\]](#)

SELECTED EVIDENCE:

- Regular inhalation of lavandin oil protects neurons from degeneration or injury by increasing antioxidant enzyme activities (superoxide dismutase and reduced glutathione) and reducing lipid peroxidation in rats with dementia.[\[1056\]](#)
 - Animal research suggests that lavandin oil inhalation (sixty minutes a day for seven days) reduces anxiety and improves spatial memory in rats with dementia.[\[1057\]](#)
 - Both the inhalation and oral administration of lavandin oil in animals provided pain relief and protected against ulcers caused by ethanol, but not ulcers caused by the NSAID indomethacin.[\[1058\]](#)
 - Lavandin oil inhibits *S. aureus* and *Pseudomonas in vitro*.[\[1059\]](#),[\[1060\]](#) It also completely eliminates the parasites *T. vaginalis*, *G. duodenalis*, and *H. inflata in vitro*.[\[1061\]](#)
 - Inhaling lavandin oil reduced test-taking anxiety among graduate nursing students.[\[1062\]](#)
 - Topical application of lavandin oil before surgery reduced anxiety.[\[1063\]](#)
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Image Credit: Nito/Shutterstock

LAVENDER

Lavandula angustifolia, Lavandula officinalis

FAMILY: Lamiaceae (Labiatae)

NOTE: Top-Middle

AROMA INTENSITY: Medium

AROMA: Floral, herbaceous, sweet, woody

COMMON EXTRACTION METHOD: Steam distilled from the flowers

POSSIBLE SUBSTITUTE OILS: Lavandin, spike lavender, neroli, bergamot, basil (Linalool CT), cistus, frankincense

BLENDS WELL WITH: All oils

RECOMMENDED DILUTION RANGE: 5%–Neat

PRIMARY COMPOUNDS: [\[1064\]](#), [\[1065\]](#), [\[1066\]](#), [\[1067\]](#), [\[1068\]](#), [\[1069\]](#), [\[1070\]](#), [\[1071\]](#), [\[1072\]](#), [\[1073\]](#), [\[1074\]](#)

True English Lavender

(Lavandula angustifolia vera, Lavandula angustifolia Mill.)

Linalool	24.5%–50.6%
Linalyl Acetate	3.7%–45.0%
Caryophyllene	0.0%–24.1%
1,8 Cineole	0.0%–19.8%
Beta-Phellandrene	0.0%–16.0%
Sabinene	0.1%–11.0%
Terpinen-4-ol	7.8%–9.6%
(Z)-Beta-Ocimene	0.0%–7.8%
Lavandulyl Acetate	2.7%–6.4%
Beta-Caryophyllene	2.0%–6.1%
Alpha-Terpineol	1.5%–6.0%
Borneol	0.4%–5.1%

Germacrene D	0.2%–4.7%
Santalene	0.4%–4.5%
Naphthalene	0.0%–4.2%
Beta-Farnesene	0.1%–4.2%

Lavandula angustifolia Munstead

Linalool	37.8%–46.1%
Alpha-Terpineol	19.2%–20.6%
Terpinen-4-ol	0.3%–19.5%
Linalyl Acetate	6.1%–12.2%
Cymene	4.8%–8.3%
Neryl Acetate	0.7%–4.4%

Brazilian

Borneol	22.4%
Epi-Alpha-Muurolol	13.4%
Alpha-Bisabolol	13.1%
Precocene I	13.0%
1,8-Cineole	7.9%
Caryophyllene Oxide	4.5%
Camphor	3.5%

Bulgarian

Linalool	25.4%–47.3%
Linalyl Acetate	19.9%–37.6%
Terpinen-4-ol	0.1%–7.4%
(Z)-Beta-Ocimene	1.7%–7.7%
Beta-Caryophyllene	1.7%–5.2%
Beta-Farnesene	1.0%–4.7%
Lavandulyl Acetate	2.5%–4.4%
Trans-Beta-Ocimene	1.0%–4.2%
1,8-Cineole	0.4%–4.2%

French

Linalool	9.3%–68.8%
Linalyl Acetate	1.2%–59.4%
Lavandulyl Acetate	0.3%–21.6%
Ocimene	0.2%–18.1%
Terpinen-4-ol	0.1%–13.5%
Lavandulol	0.0%–4.3%
1,8-Cineole	0.0%–3.4%

Indian

Linalyl Acetate	35.4%–49.5%
Linalool	26.7%–37.1%
Lavandulyl Acetate	0.6%–4.5%
Beta-Caryophyllene	0.9%–4.0%
Alpha-Terpineol	1.2%–3.8%

Italian

Linalool	33.3%–45.0%
Linalyl Acetate	31.7%–41.2%
Terpinen-4-ol	1.1%–3.6%

Polish

Linalool	27.3%–34.7%
Linalyl Acetate	19.7%–22.4%
Lavandulyl Acetate	4.5%–5.7%
Ocimene	1.9%–2.9%
Terpinen-4-ol	1.1%–2.0%

*Some reports suggest lavender contains significant amounts of 1,8-cineole (eucalyptol); however, these may be misidentified lavandin or spike lavender (*Lavandula spica*) samples, or adulterated samples. Lavender essential oil is often adulterated with lavandin. Shorter distillation times also increase the 1,8-cineole content of lavender essential oils. [\[1075\]](#)

OTHER COMPOUNDS: Limonene, alpha-pinene, camphene, cymene, butanoic acid hexyl ester, 1-octen-3-ol, 3-octanone, hexyl acetate, neryl acetate, beta-farnesene, alpha-terpineol, borneol, geranyl acetate, geraniol, camphor, caryophyllene, bisabolol, octene-3-yl-acetate, p-cymene-1-ol-8, beta-caryophyllene

REPORTED THERAPEUTIC PROPERTIES: Skin healing, analgesic (pain relief), antibacterial, anti-inflammatory, **relives burns and sunburn**, immune supportive, anticancer, antimicrobial, antiseptic, **antifungal, antispasmodic**, diuretic, nervine (calms and soothes the nerves), sedating, **reduces the appearance of scars and blemishes**, aids digestion, reduces fever, **helps bruises and boils heal**, helps relieve colic, helps relieve painful menstruation, **encourages restful sleep**, eases cough, **helps relieve headache**, balances blood pressure, stimulating, relaxing, combats irritability, **adaptogenic**, antidepressant, **reduces anxiety, stress management**, reduces fear, **calms shock and panic attacks**, encourages feelings of love

CAUTIONS:

- None currently known.

SELECTED EVIDENCE:

- *In vitro* research concluded that lavender oil promoted the destruction (apoptosis) of breast cancer cells, but had little effect on normal healthy cells. [\[1076\]](#)
- A daily abdominal massage with a combination of lavender, clary sage, and marjoram (2:1:1 ratio) from the end of the last menstruation to the beginning of the next menstruation significantly

- reduced painful menstruation according to a randomized, double-blind clinical trial.[\[1077\]](#)
- A sitz bath with or soap application of lavender, myrrh, neroli, rose, grapefruit, mandarin, orange, and Roman chamomile improves healing of the perineum following delivery and episiotomy.[\[1078\]](#) Another study observed that a lavender oil sitz bath (five to seven drops of lavender oil in four liters of water) twice daily for ten days reduced inflammation and redness of the episiotomy area better than the standard treatment option (Povidone-iodine).[\[1079\]](#) Pain relief was equivalent in the two groups. Two additional studies concluded that lavender essential oil may be preferable to Betadine and povidone-iodine for episiotomy wound care.[\[1080\]](#)[\[1081\]](#)
 - A daily abdominal massage with a combination of rose, cinnamon, clove, and lavender oils in an almond carrier oil for seven days prior to menstruation significantly reduced painful menstruation and excess menstrual bleeding in women suffering from painful menstruation.[\[1082\]](#) A second study found that painful menstrual cramps were relieved in women by massaging the abdomen with two drops of lavender, and one drop each of rose and clary sage in 5 ml of almond oil.[\[1083\]](#)
 - Regular inhalation of lavender oil protects neurons from degeneration or injury by increasing antioxidant enzyme activities (superoxide dismutase and reduced glutathione) and reducing lipid peroxidation in rats with dementia.[\[1084\]](#)
 - A lavender massage between the hours of 3:00 and 4:00 p.m. decreased the agitated behavior in people with dementia better than inhalation of lavender alone.[\[1085\]](#)
 - Animal research suggests that lavender oil inhalation (sixty minutes a day for seven days) reduces anxiety and improves spatial memory in rats with dementia.[\[1086\]](#)
 - *In vitro* and animal research suggests that lavender oil may help prevent and treat intestinal dysbiosis (a state of altered intestinal flora to one of harmful bacteria that contributes to a variety of chronic and degenerative diseases) by selectively destroying harmful bacteria while leaving probiotics intact.[\[1087\]](#)[\[1088\]](#)
 - Multiple clinical studies suggest that the oral administration of a product containing lavender oil (silexan) significantly reduces anxiety (comparable to standard drug options), improves depressive symptoms, relieves post-traumatic stress disorder, and enhances overall mental health.[\[1089\]](#)[\[1090\]](#)[\[1091\]](#)[\[1092\]](#)[\[1093\]](#)[\[1094\]](#)[\[1095\]](#)
 - A hand massage with equal parts of frankincense, bergamot, and lavender (as a 1.5 dilution with sweet almond carrier oil) reduced the pain and depression of hospice patients with terminal cancer.[\[1096\]](#)
 - Bathing with a solution containing 20% lavender oil and 80% grapeseed oil for fourteen days positively affected mood, and reduced negative thoughts about the future in forty women being treated for psychological disorders.[\[1097\]](#)
 - A lavender oil hand massage enhances emotions and reduces aggressive behavior in elderly people with dementia.[\[1098\]](#)
 - A foot bath (107°F water) with salts and either oregano, thyme, cinnamon bark, lemongrass, clove, palmarosa, peppermint, lavender, or geranium significantly reduced fungi associated with athlete's foot *in vitro*.[\[1099\]](#)
 - Postpartum women who received a thirty-minute massage on the second postpartum day with 7 drops of lavender and 3 drops of neroli in 100 ml of carrier oil experienced significantly lower postpartum depression, reduced anxiety, and were more interactive with their infant.[\[1100\]](#)
 - Animal research suggests that lavender can protect the myocardium (the muscular tissue of the heart) against damage during a heart attack.[\[1101\]](#) Another animal study concluded that a

- combination of lavender, monarda, and basil oils reduces cholesterol in the aorta and adverse effects by accumulation of atherosclerotic plaques in the aorta.[\[1102\]](#)
- Injection of lavender essential oil in mice reduced anxiety-induced conflict as well as the drug diazepam (a psychoactive drug used to treat psychological disorders like anxiety and panic attacks).[\[1103\]](#),[\[1104\]](#)
 - Inhalation of lavender oil influenced serotonin production and prevented serotonin syndrome caused by a combination of fluoxetine (an SSRI antidepressant drug) and 5-HTP in mice.[\[1105\]](#)
 - Lavender oil helps reverse drug-resistance by *E. coli* by disrupting bacterial cell membrane integrity.[\[1106\]](#)
 - Lavender oil completely eliminates the parasites *T. vaginalis*, *G. duodenalis*, and *H. inflata in vitro*.[\[1107\]](#)
 - *In vitro* research discovered that lavender oil prevented the formation of germ tubes by *C. albicans* and killed all *C. albicans* cells within fifteen minutes of exposure.[\[1108\]](#) Germ tubes are used by the spores to reproduce and spread.
 - Topical application of a spray with tea tree and lavender oils twice daily for three months decreased unwanted, male-pattern hair growth in women (hirsutism).[\[1109\]](#)
 - Massaging the hands with lavender and rose oil (2% dilution) for fifteen minutes twice weekly for four consecutive weeks reduced depression and anxiety in postpartum women.[\[1110\]](#)
 - Inhalation of lavender oil improves parasympathetic nervous system activity and relieves emotional symptoms related to PMS (premenstrual syndrome).[\[1111\]](#)
 - The oral administration of 0.2 ml of lavender essential oil decreased anxiety of volunteers watching anxiety-provoking movies.[\[1112\]](#)
 - Animal research suggests that lavender oil significantly reduces excess accumulation of fluid in the brain (cerebral edema) and protects neurons and tissue from oxidative damage caused by a loss of and subsequent return of blood supply (ischemia/reperfusion, like during a stroke) by enhancing the body's production of key antioxidants (reduced glutathione, superoxide dismutase, and catalase) according to animal research.[\[1113\]](#),[\[1114\]](#)
 - *In vitro* research reported that lavender oil provides a sun protection factor (SPF) of 5.624.[\[1115\]](#)
 - Topical application of lavender oil reduced painful menstruation in a study that included forty-four female students.[\[1116\]](#)
 - Inhalation of lavender oil reduces the need for oral pain relievers but not the intensity of pain or frequency of nighttime awakening in children following tonsillectomy.[\[1117\]](#)
 - Lavender inhalation directly from a glass bottle from 10:00 p.m. to 6:00 a.m. improved sleep quality of hospital patients in an intermediate care unit.[\[1118\]](#)
 - Inhaling lavender, lemon, and ylang ylang oil (2:2:1 ratio) reduced systolic blood pressure, and influenced heart rate and sympathetic nervous system activity in people with essential hypertension (high blood pressure without an identifiable cause).[\[1119\]](#) Another study found that inhaling lavender, ylang ylang, and bergamot oils once daily for four weeks reduced cortisol levels, psychological stress, and blood pressure in people with essential hypertension.[\[1120\]](#)
 - A clinical study concluded that both cortisol and systolic blood pressure declines after inhalation of a combination of lavender, ylang ylang, marjoram, and neroli oil in those with high blood pressure or pre-high blood pressure.[\[1121\]](#)
 - Healthy volunteers experienced an increase in chromogranin A (CgA)—an indication of psychological stress—after performing an arithmetic task for ten minutes. The CgA levels of the volunteers significantly decreased after ten minutes of lavender oil inhalation.[\[1122\]](#)

- Inhalation of lavender oil moderates the stress response by decreasing blood pressure, heart rate, and skin temperature. In addition, the researchers observed that those who inhaled lavender oil reported mood improvements (more active, fresher, and more relaxed).[\[1123\]](#)
- *In vitro* research suggests that lavender oil may reduce agitation by reducing the release of neurotransmitters, and therefore reducing arousal and stimulation of the brain.[\[1124\]](#)
- Women who inhaled lavender oil after a cesarean section experienced decreased pain when compared to those who inhaled a placebo.[\[1125\]](#)
- Topical application of lavender oil significantly reduced inflammation, pain, ulcer size, and healing time (from two to four days) of canker sores (aphthous ulcers) in humans and animals.[\[1126\]](#)
- The topical application of lavender and clary sage oils reduced work-related stress in intensive care unit nurses during three twelve-hour shifts.[\[1127\]](#) Another study found similar results among nurses who inhaled lavender oil from small bottles pinned to their clothes on the right chest.[\[1128\]](#)
- Inhaling lavender oil for fifteen minutes relieved the pain and other symptoms associated with acute migraines in a small clinical trial.[\[1129\]](#)
- A small clinical study observed that inhalation of lavender decreased alpha-amylase levels in the saliva of fifteen young, healthy adults.[\[1130\]](#) Elevated alpha-amylase is an indication of stress and stress-related activity.
- Gerbils exposed to the aroma of lavender oil experienced decreased anxiety similar to diazepam (a drug used to treat anxiety disorders), and were more willing to explore.[\[1131\]](#)
- Inhaling a combination of peppermint, artemisia, sage, lavender, and monarda improved the symptoms of people with chronic bronchitis being treated with standard options concurrently.[\[1132\]](#)
- Lavender oil prevented the mutagenic (the ability to cause changes in genetic material) action of the toxins 1-nitropyrene and 2-nitrofluorene in *S. typhumurin*.[\[1133\]](#)
- Animal research suggests that inhalation of lavender oil suppresses respiratory inflammation caused by inhaled allergens (antigens), and may be useful for asthma.[\[1134\]](#) Another study determined that lavender may decrease inflammation by increasing the cell's protective mechanism against stress-induced damage.[\[1135\]](#)
- When mice were administered 200 mg/kg of lavender oil they experienced reduced pain and inflammation, including both phases of the formalin test, and prevented edema caused by carrageenan (a chemical irritant that is commonly used to produce inflammation in rodents).[\[1136\]](#) The formalin test involves administration of the chemical irritant formalin to determine both the immediate pain relieving effect (phase I) and the anti-inflammatory effect of another compound (phase II), which in this case is lavender oil.
- Diffusion of lavender oil nightly reduced insomnia and anxiety among residents with dementia and disturbed sleep patterns in four different nursing homes.[\[1137\]](#)
- Lavender oil reduces intestinal spasms in rats.[\[1138\]](#)
- Inhalation of lavender oil reversed hyperactivity caused by an injection of caffeine in animals.[\[1139\]](#)
- Animal research suggests that lavender oil can produce a local anesthetic effect.[\[1140\]](#) Another study observed a sedative effect in mice administered lavender oil orally and enhanced the sleep-inducing effect of pentobarbital (a drug used to treat anxiety, sleeplessness, and nervousness).[\[1141\]](#)
- Animal research suggests that lavender oil is adaptogenic. Mice that inhaled lavender negated

the impact of stress or experienced increased stress activity depending on their current state of stress.[\[1142\]](#)

- Lavender oil inhalation via a face mask for five minutes reduced the stress and pain associated with needle insertion among healthy volunteers.[\[1143\]](#)
- A preliminary study found that medical staff who worked night shifts experienced endothelial dysfunction (a risk factor that often precedes atherosclerosis), which was alleviated by inhaling lavender for thirty minutes.[\[1144\]](#)
- Topical application of a combination of lavender, geranium, tea tree, and peppermint oils improved the oral health of hospice patients with terminal cancer.[\[1145\]](#)
- Inhalation of humidified lavender oil positively improved blood pressure, heart rate, pain, anxiety, depression, and sense of well-being in seventeen cancer hospice patients.[\[1146\]](#)
- Topical application of a product containing 1% lavender and 10% tea tree oils worked better than the chemical alternative of pyrethrins and piperonyl butoxide, and as well as a suffocation product to eliminate head lice (louse).[\[1147\]](#) Another study concluded that the same combination of oils was slightly less effective than the suffocation method (44.4% versus 68.3%).[\[1148\]](#)
- Inhaling lavender oil in the waiting room prior to dental visits reduces anxiety in dental patients.[\[1149\]](#),[\[1150\]](#)
- Both lavender and vetiver oil decreased inhalation and increased exhalation in healthy sleepers when the oils were diffused for nine to fifteen minutes up to thirty-seven times per night.[\[1151\]](#)
- A lavender oil bath decreased stress and cortisol levels in both the mothers and the infants, reduced infant crying, and improved deep-sleep time for the infants following the bath.[\[1152\]](#)
- A clinical study determined that inhalation of lavender oil in an oxygen face mask following laparoscopic gastric banding surgery reduced the patient's demand for opioid pain relievers.[\[1153\]](#)
- Healthy men experienced decreased cortisol and improved coronary flow velocity reserve (a test used to determine the effectiveness of a remedy to dilate the arteries and improve blood flow through the blood vessels) after inhaling four drops of lavender oil in 20 ml of hot water for thirty minutes.[\[1154\]](#)
- Intermittent inhalation of lavender oil while sleeping increases deep sleep in healthy young men and women.[\[1155\]](#) Another study determined that inhalation of lavender oil improved mild insomnia in ten volunteers.[\[1156\]](#)
- Topical application of a 1.5% solution containing lavender, marjoram, eucalyptus, rosemary, and peppermint (2:1:2:1:1 ratio) in a carrier oil consisting of 45% apricot, 45% almond, and 10% jojoba carrier oils significantly decreased pain and depression in people with arthritis.[\[1157\]](#)
- Inhalation of a 2% lavender oil preparation reduced agitated behavior in nine people with severe dementia.[\[1158\]](#)
- *In vitro* and animal research suggests that topical application and injection of lavender oil prevents immediate allergic reactions by inhibiting mast cell degranulation (when mast cells degranulate they rapidly release proinflammatory molecules like histamine and tumor necrosis factor-alpha).[\[1159\]](#)
- A daily scalp massage with thyme, rosemary, lavender, and cedarwood oils in a mixture of carrier oils (jojoba and grapeseed) improved alopecia areata (round patches of hair loss) in 44% of study participants.[\[1160\]](#)
- A 10% or 20% solution of lavender provided equivalent tick repellency as DEET over a two hour period.[\[1161\]](#)



LEMON

Citrus limon

FAMILY: Rutaceae

NOTE: Top

AROMA INTENSITY: Medium

AROMA: Clean, fresh, citrusy, fruity

COMMON EXTRACTION METHOD: Cold-pressed/expressed or hydrodistilled from the fruit peel (rind)

POSSIBLE SUBSTITUTE OILS: Lime, orange, grapefruit, bergamot, tangerine, neroli, petitgrain

BLENDS WELL WITH: Bay laurel, bergamot, camphor, cajeput, cardamom, carrot seed, cassia, chamomile (German, Roman), cinnamon, cistus, citronella, copaiba, coriander, eucalyptus, fennel, frankincense, geranium, grapefruit, lavender, lemongrass, lemon verbena, lime, melissa, melaleuca (tea tree), neroli, niaouli, orange, petitgrain, pine, patchouli, ravensara, rose, sage, sandalwood, silver fir, Spanish sage, tangerine, vetiver, white fir

RECOMMENDED DILUTION RANGE: 3%–50%; neat for some conditions

PRIMARY COMPOUNDS: [\[1162\]](#), [\[1163\]](#), [\[1164\]](#)

Cold-pressed/expressed

Limonene 38.1%–95.8%

Gamma-Terpinene 0.1%–18.0%

Beta-Pinene 0.1%–15.8%

Para-Cymene 0.0%–7.8%

Sabinene 0.1%–6.3%

Distilled

Limonene 61.8%–73.8%

Gamma-Terpinene	9.8%–10.4%
Beta-Pinene	0.0%–6.9%
Sabinene	0.0%–5.8%
Citral	0.0%–5.4%
Beta-Bisabolene	0.0%–4.9%

OTHER COMPOUNDS: *Cold-pressed/expressed*—Alpha-thujene, alpha-pinene, camphene, myrcene, beta-phellandrene, terpinolene, trans-limonene-1,2-oxide, linalool, terpinen-4-ol, alpha-terpineol, nerol, linalyl acetate, terpinyl acetate, neryl acetate, geranyl acetate, beta-bisabolene, trans-R-bergamotene, beta-elemene, neral, geranial, germacrene D, thymol; *Distilled*—Alpha-thujene, alpha-pinene, camphene, myrcene, alpha-terpinene, 1,8-cineole, linalool, terpinen-4-ol, alpha-terpineol, nerol, linalyl acetate, germacrene D

REPORTED THERAPEUTIC PROPERTIES: Antibacterial, analgesic (pain relief), antifungal, **antiseptic**, anti-inflammatory, **immune supportive**, antimicrobial, antineuralgic, **diuretic**, improves skin luster, nourishes the skin, **reduces the appearance of wrinkles and blemishes**, disinfectant, strengthens nails, **weight management**, reduces fever, nourishes hair, antirheumatic, soothes mouth sores, antiseptic, astringent, **helps boils heal**, expels excess gas, aids digestion, encourages a restful night's sleep, relieves constipation, helps lower high blood pressure, soothes swollen glands, **relieves nausea and vomiting**, aids detoxification, antiparasitic, **adaptogenic**, combats frustration, stress management, sedating, **antidepressant**, uplifting, aids concentration, **combats nightmares**

CAUTIONS:

- May be photosensitizing (cold-pressed/expressed). Avoid sun exposure to area of application for at least twelve hours after topical application.[\[1165\]](#),[\[1166\]](#),[\[1167\]](#)

SELECTED EVIDENCE:

- *In vitro* research suggests that lemon oil activates enzyme activity (like caspases) that promotes apoptosis of astrocytoma cells (cancerous astrocyte cells that make up the supportive tissue of the brain and form brain tumors).[\[1168\]](#)
- Lemon oil reduces elastase activity (an enzyme involved in the breakdown of elastin) *in vitro*, which may help prevent wrinkles and aging of the skin.[\[1169\]](#) Elastin helps keep skin tight, supple, and flexible.
- Inhaling lavender, lemon, and ylang ylang oil (2:2:1 ratio) reduced systolic blood pressure, and influenced heart rate and sympathetic nervous system activity in people with essential hypertension (also called primary hypertension, it is high blood pressure without an identifiable cause).[\[1170\]](#)
- Animal research suggests that inhalation of lemon oil reduces anxiety and depression by influencing dopamine and serotonin activity.[\[1171\]](#)
- Pregnant women who inhaled 1 to 2 drops of lemon oil on a cotton ball placed directly under their nose experienced improvements in pregnancy-associated nausea and vomiting.[\[1172\]](#)
- After seventeen days of soaking a plantar wart followed by the topical application of lavender, wintergreen, lemongrass, peppermint, and two blends of oils (containing wintergreen,

helichrysum, clove, peppermint, coconut oil, grape seed oil, almond oil, olive oil, oregano, eucalyptus, elemi, vetiver, lemongrass, and thyme), the wart fell off in a immunosuppressed (from chemotherapy) fifty-three-year-old female.[\[1173\]](#) This is significant considering that a plantar wart can take a few weeks to fall off after cryotherapy.

- Compounds found in lemon (limonene and perillyl alcohol) improved dementia caused by the drug scopolamine in animals.[\[1174\]](#)
- A nasal spray with lemon, ravensara, and niaouli oils (0.14 ml consisting of 0.014 ml lemon, 0.042 ml aloe vera juice, 0.0007 ml ravensara, 0.0007 g propolis, and 0.00042 ml niaouli oil) decreased the symptoms of allergic and nonallergic rhinopathy (nasal congestion, drainage, and obstruction of the nasal passages) in a clinical trial.[\[1175\]](#)
- *In vitro* research concluded that lemon oil enhanced the penetration of vitamins A, C, E, and B6 through the skin.[\[1176\]](#)
- An abdominal massage with lemon, rosemary, and peppermint oil relieved constipation in the elderly.[\[1177\]](#) Interestingly, the effect of the massage lasted for two weeks after treatment.
- Three minutes of oral cleansing daily with a combination of tea tree, peppermint, and lemon oils helped reduce bad breath and production of volatile sulfur compounds (compounds excreted by oral bacteria that cause bad breath) in intensive care patients.[\[1178\]](#) Another study combined alpha-bisabolol with tea tree oil and found that this combination killed the bacteria associated with bad breath (*S. moorei*).[\[1179\]](#)
- *In vitro* research suggests that lemon oil may prevent and manage neurodegenerative diseases caused by oxidative stress by inhibiting acetylcholinesterase (AChE) and butyrylcholinesterase (BChE) enzyme activity, and preventing lipid peroxidation.[\[1180\]](#) Inhibition of AChE prevents the breakdown of acetylcholine, which is essential for memory and thinking. People with neurodegenerative diseases make less acetylcholine, and the diseases often break it down at a faster rate leading to acetylcholine deficits. Selective inhibition of BChE is also desirable in neurodegenerative diseases because it interferes with acetylcholine activity. In addition, BChE is often found in the plaques and tangles in the brains of people with Alzheimer's disease.[\[1181\]](#)
- Direct infusions of 20–30 ml of limonene dissolved gallstones in people in as few as three days.[\[1182\]](#),[\[1183\]](#) While these are extreme doses and were administered through injection, anecdotal evidence from user testimonials suggest that smaller amounts of lemon oil may also be effective.
- Oral administration of 1,000 mg of d-limonene every day or every other day relieved heartburn and GERD symptoms in 89% of people after fourteen days of use.[\[1184\]](#),[\[1185\]](#)
- Lemon oil increased the effectiveness of gentamicin (an antibiotic drug) against multi-drug-resistant *Acinetobacter* species *in vitro*.[\[1186\]](#)
- *In vitro* research concluded that lemon oil is effective against the bacterium *B. subtilis*, *S. capitis*, *M. luteus*, and *P. fluorescens*, and the yeasts *S. cerevisiae* and *C. parapsilosis*.[\[1187\]](#)
- Animal research suggests that lemon oil prevents damage to the hippocampus (the part of the brain involved in the storage of long-term memory, knowledge, experiences, and the related emotions) caused by oxidative stress associated with neurodegenerative diseases.[\[1188\]](#)
- Lemon oil helps decrease inflammation by strongly inhibiting the 5-lipoxygenase (5-LOX) enzyme that is involved in the inflammation response according to *in vitro* research.[\[1189\]](#)
- Oral administration of 50–100 mg/kg of lemon oil relieves pain by binding to and activating opioid receptors in mice.[\[1190\]](#)
- Animal research suggests that lemon oil reduced anxiety and depression by interacting with GABA receptors (GABA binds to receptors to reduce the excitatory activity of the brain that

- causes anxiety, panic, and fear) and possibly by modulating serotonin and noradrenaline levels. [\[1191\]](#) Another study concluded that inhalation of lemon oil reliably elevated mood and increased norepinephrine levels (low norepinephrine levels are associated with depression). [\[1192\]](#)
- Inhalation of lemon oil balances the autonomic nervous system (ANS)—adaptogenic. It differentially influenced ANS activity in healthy and depressed persons. Healthy subjects experienced increased sympathetic and parasympathetic activity after inhalation, whereas depressed persons experienced increased parasympathetic activity. [\[1193\]](#) Sympathetic nervous system activity is often elevated and parasympathetic activity decreased in people who are depressed.
 - *In vitro* research reported that lemon oil provides a sun protection factor (SPF) of 2.81. [\[1194\]](#)
 - Lemon oil demonstrated better anticandidal activity than the anticandidal drugs miconazole and clotrimazole *in vitro*. [\[1195\]](#)
 - Oral administration of d-limonene reduced metabolic disorders (reduced high blood-sugar levels and improved cholesterol profiles) in high-fat diet caused obese mice. [\[1196\]](#) The researchers concluded this effect was caused by activation of peroxisome proliferator-activated receptors, PPARs for short, (receptor proteins that regulate gene expression, cellular differentiation, metabolism, and tumor growth) and liver X receptor-beta signaling (receptors that detect cholesterol and activate pathways that lower cholesterol levels).
 - Lemon oil may help prevent cavities by preventing glucosyltransferase (GST) and lactate dehydrogenase activity, and reducing acid production and water insoluble glucans in the mouth. All of these factors work together to increase the risk of cavities and other oral conditions. [\[1197\]](#) The existence of streptococci in the mouth is strongly associated with cavities; however, they require the presence of both sugar and the enzyme GST to cause cavities. GST enhances the formation of sticky water insoluble glucans from sugar, which adhere Streptococci bacteria to the teeth and form plaque. In addition, streptococci in the plaque use sugar to create acid that attacks the teeth and creates the holes in them known as cavities.
 - Animal research suggests that lemon oil may enhance the learning ability of rats. [\[1198\]](#) Rats who inhaled lemon oil were able to find a target faster than the control group.
 - Researchers concluded that lemon oil inhibited several *Candida* species and bacterium known to cause hospital-acquired infections according to *in vitro* research. [\[1199\]](#)
 - Rats exposed to the aroma of lemon oil (3 drops added to the cage every three days for eleven to twelve days) experienced changes in corticosterone levels and neuronal responses that decreased anxiety and pain. [\[1200\]](#), [\[1201\]](#), [\[1202\]](#)
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LEMON VERBENA

Lippia citriodora, *Aloysia triphylla*, *Aloysia citriodora*

FAMILY: Verbenaceae

NOTE: Top

AROMA INTENSITY: Medium

AROMA: Fresh, lemony, citrusy, sweet, slightly floral

COMMON EXTRACTION METHOD: Steam distilled from the flowering stocks

POSSIBLE SUBSTITUTE OILS: Lemongrass, melissa, lime, rose

BLENDS WELL WITH: Bergamot, fennel, grapefruit, lemon, lime, lemongrass, neroli, niaouli, orange, tangerine

RECOMMENDED DILUTION RANGE: 3%–20%; neat for some conditions

PRIMARY COMPOUNDS: [\[1203\]](#), [\[1204\]](#), [\[1205\]](#)

Stems

Geranial	29.5%–38.5%
Neral	25.7%–27.4%
Limonene	5.6%–15.9%
Alpha-Zingiberene	2.8%–5.7%
Methyl Heptenone	0.3%–4.0%
Geraniol	0.0%–4.0%
Geranyl Acetate	0.9%–4.0%
Caryophyllene Oxide	0.8%–2.5%
ar-Curcumene	0.6%–1.7%

Leaves

Geranial	29.5%–39.6%
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Neral	23.0%–27.4%
ar-Curcumene	1.3%–6.1%
Limonene	3.2%–5.4%
Caryophyllene Oxide	1.3%–5.1%
Alpha-Zingiberene	1.9%–3.7%

Leaves and Stems

Geranial	9.9%–26.0%
Limonene	3.7%–18.6%
Neral	6.0%–12.0%
Methyl Heptenone	1.4%–7.4%
Geraniol	0.1%–6.0%
ar-Curcumene	3.0%–5.7%
Spathulenol	2.5%–5.2%
Nerol	0.0%–5.2%
Caryophyllene Oxide	3.1%–4.9%
Beta-Caryophyllene	0.4%–4.3%
Neryl Acetate	0.0%–4.0%

OTHER COMPOUNDS: Alpha-pinene, sabinene, beta-pinene, 6-methyl-5-hepten-2-one, myrcene, E-beta-ocimene, gamma-terpinene, cis-sabinene hydrate, linalool, cis-thujone, cis-limonene oxide, trans-limonene oxide, citronellal, alpha-terpineol, methyl citronellate, delta-elemene, eugenol, geranyl acetate, E-caryophyllene, E-beta-farnesene, Germacrene D, gamma-cadinene, delta-cadinene, 4-beta-hydroxygermacra-1(10), 5-diene, alpha-cadinol, n-nonadecane, n-pentacosane, n-hexacosane, n-octacosane

REPORTED THERAPEUTIC PROPERTIES: Analgesic (pain relief), **anti-inflammatory (especially gastrointestinal)**, antibacterial, antiparasitic, antiseptic, **antiviral**, antispasmodic, stimulates organ (gallbladder, liver, pancreas, thyroid) function, **nourishes the skin**, decreases the appearance of blemishes, reduces fever, aids digestion, increases hair luster, **combats anxiety**, stress management, antidepressant

CAUTIONS:

- Caution is advised during pregnancy and lactation due to high citral content. Large doses of citral may negatively affect fetal development according to animal studies.[\[1206\]](#)
- May mildly interfere with enzymes responsible for metabolizing medications (NSAIDs, proton-pump inhibitors, acetaminophen, antiepileptics, immune modulators, blood-sugar medications, blood-pressure medications, antidepressants, antipsychotics, diabetic medications, antihistamines, antibiotics, and anesthetics).[\[1207\]](#),[\[1208\]](#),[\[1209\]](#)
- Use cautiously with diabetic medications. Large oral doses of citral may improve insulin sensitivity and lower blood-glucose levels according to animal research.[\[1210\]](#)
- Dilution is recommended for topical application due to high citral content.

SELECTED EVIDENCE:

- Oral administration of 250 mg/kg of lemon verbena oil significantly reduces (85.4%) the protozoan parasite *T. cruzi* in mice.[\[1211\]](#) *T. cruzi* causes the potentially life-threatening illness Chagas disease, also known as American trypanosomiasis. An *in vitro* study found that lemon verbena actively inhibits the parasites *L. chagasi* and *T. cruzi*.[\[1212\]](#)
 - Lemon verbena destroyed *H. pylori* (a pathogen responsible for sores in the stomach and upper part of the small intestine) in mice without promoting resistance (as is often the case with antibiotics).[\[1213\]](#)
 - *In vitro* research concluded that citral and lemon verbena oil prevented yellow fever virus replication before and after attachment to a cell (adsorption).[\[1214\]](#)
 - Lemon verbena oil inactivates and prevents the replication of four dengue viruses before attachment to a cell (adsorption) *in vitro*.[\[1215\]](#)
 - Lemon verbena is considered a promising treatment for candidiasis due to its ability to inhibit several drug-resistant *Candida* species (*C. albicans*, *C. dubliniensis*, *C. glabrata*, *C. krusei*, *C. guilliermondii*, *C. parapsilosis*, and *C. tropicalis*) *in vitro*.[\[1216\]](#),[\[1217\]](#)
 - *In vitro* research suggests that lemon verbena inhibits several pathogens including *S. aureus*, *S. epidermidis*, *B. cereus*, *M. luteus*, *Klebsiella* sp., and *P. mirabilis*.[\[1218\]](#)
 - Oral administration of an aqueous lemon verbena extract relieved intestinal spasms in rats.[\[1219\]](#)
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LEMONGRASS

Cymbopogon flexuosus, *Cymbopogon citratus*

FAMILY: Poaceae (Gramineae)

NOTE: Top-Middle

AROMA INTENSITY: Strong

AROMA: Fresh, lemony, grassy, earthy

COMMON EXTRACTION METHOD: Steam distilled from the grass

POSSIBLE SUBSTITUTE OILS: Melissa, lemon verbena, lime (distilled), tangerine (distilled), citronella,

palmarosa

BLENDS WELL WITH: Basil, bergamot, black pepper, camphor, cardamom, cedarwood, citronella, clary sage, copaiba, cypress, fennel, geranium, ginger, grapefruit, lavender, lavandin, lemon, lemon verbena, lime, melaleuca (tea tree), myrrh, neroli, orange, pine, tangerine, thyme, vetiver, ylang ylang

RECOMMENDED DILUTION RANGE: 1.5%–20%; neat for some conditions

PRIMARY COMPOUNDS: [\[1220\]](#), [\[1221\]](#), [\[1222\]](#), [\[1223\]](#)

East Indian (Cymbopogon flexuosus)

Geranial 25.0%–53.0%

Neral 20.0%–45.0%

Caryophyllene Oxide 1.3%–7.2%

Nerol 0.0%–2.9%

West Indian (Cymbopogon citratus)

Geranial 27.0%–48.1%

Neral 19.3%–34.6%

Beta-Myrcene 3.2%–27.0%

3-Undecyne 1.5%–6.1%

Nerol 3.1%–3.7%

OTHER COMPOUNDS: Alpha-pinene oxide, beta-ocimene, linalool, gamma-murolene, geranic acid, geranyl acetate, alpha-bergamotene, delta-cadinene, isocaryophyllene, alpha-cadinol, juniper camphor, di-n-octyl phthalate

REPORTED THERAPEUTIC PROPERTIES: Analgesic (pain relief), **antifungal**, nervine (calms and soothes the nerves), anti-inflammatory, diuretic, **helps relieve headache**, aids detoxification, supports eye health, anticancer, anticonvulsive, **antimicrobial**, antioxidant, antiallergenic, antiparasitic, antiseptic, antiviral, **astrigent**, antibacterial, **antineuralgic**, helps expel excess gas, relieves diarrhea, **insect repellent**, eases sports injuries, aids digestion, helps bruises heal, circulatory aid, reduces fever, deodorant, soothes swollen glands, sedating, antidepressant, helps ease difficult emotional transitions, energizing, reduces mental fatigue, **stress management**

CAUTIONS:

- Caution is advised during pregnancy and lactation due to high citral and beta-myrcene content. Large doses of citral may negatively affect fetal development according to animal studies. [\[1224\]](#) Extremely high doses of beta-myrcene have been toxic to fetuses according to animal research. [\[1225\]](#)
- There is a moderate risk that when lemongrass is taken orally it may interfere with enzymes responsible for metabolizing medications (NSAIDs, proton-pump inhibitors, acetaminophen, antiepileptics, immune modulators, blood-sugar medications, blood-pressure medications, antidepressants, antipsychotics, diabetic medications, antihistamines, antibiotics, and anesthetics). [\[1226\]](#), [\[1227\]](#), [\[1228\]](#), [\[1229\]](#)
- Use cautiously with diabetic medications. Large oral doses of citral may improve insulin sensitivity and lower blood-glucose levels according to animal research. [\[1230\]](#), [\[1231\]](#)

- May interact with antibiotics and possibly enhance their effects.[\[1232\]](#)
- Dilution is recommended for topical application due to high citral content.

SELECTED EVIDENCE:

- Animal research suggests that injection of 200 mg/kg of lemongrass oil into the peritoneal cavity (the fluid-filled gap between the abdominal wall and abdominal organs) promotes destruction of lung sarcoma cells by triggering apoptosis.[\[1233\]](#) The same study concluded that lemongrass oil kills colon and neuroblastoma cancer cells.
- Oral administration of lemongrass protected mice from DNA damage and breast cancer caused by the known cancer-causing agent N-methyl-N-nitrosourea.[\[1234\]](#)
- Lemongrass oil caused destruction of leukemia cells through activation of both internal and external pathways of apoptosis.[\[1235\]](#)
- A case report describes the use of a combination of the essential oil of lemongrass, eucalyptus, melaleuca (tea tree), clove, thyme and BHT, triclosan, and undenatured alcohol to treat a chronic infection of the lower tibia (osteomyelitis) that was not responding to several courses of IV antibiotics. Amputation of the lower leg was being considered when a physician recommended the leg be opened up and the combination inserted directly into the bone (through a drilled hole, 1 ml per day for forty-eight hours). At three months, the wound and bone healed, and symptoms were resolved.[\[1236\]](#)
- Lemongrass completely inhibits the growth of *H. pylori* (a bacteria involved in the cause of peptic ulcers) without causing resistance in mice.[\[1237\]](#)
- Animal research suggests that lemongrass influences central nervous system activity and modulates gamma-aminobutyric acid (GABA) activity to help prevent seizures and convulsions.[\[1238\]](#)
- Lemongrass prevented anaphylactic reactions and allergic responses in mice by suppressing immunoglobulin E (IgE) (an antibody that binds to allergens and releases substances from mast cells that cause inflammation and a cascade of events that plays a major role in allergic diseases) activity.[\[1239\]](#)
- *In vitro* research suggests that lemongrass oil can destroy *C. albicans* (including drug-resistant *C. albicans*) and prevent recurrent infections associated with the growth of *C. albicans*.[\[1240\]](#), [\[1241\]](#),[\[1242\]](#) Another study found that lemongrass oil inhibited oral *C. albicans* infections when it was added to a tissue conditioner typically applied following dental prosthesis insertion *in vitro*.[\[1243\]](#) One study determined that lemongrass was a valuable remedy for oral and vaginal candidiasis after concluding that it inhibits both mycelial and yeast-form growth of *C. albicans*.[\[1244\]](#)
- Animal research concluded that lemongrass protected brain neurons from death due to glutamate toxicity.[\[1245\]](#)
- Lemongrass oil demonstrated better anticandidal activity than the anticandidal drugs miconazole and clotrimazole *in vitro*.[\[1246\]](#)
- Researchers concluded that lemongrass oil inhibited several *Candida* species and bacterium known to cause hospital-acquired infections according to *in vitro* research.[\[1247\]](#)
- The vapor of lemongrass oil inhibited both penicillin-susceptible and penicillin-resistant respiratory pathogens (*H. influenzae*, *S. pneumoniae*, *S. pyogenes*, and *S. aureus*) *in vitro*.[\[1248\]](#)
- *In vitro* research concluded that lemongrass oil inhibits *C. albicans*, *S. aureus*, *P. aeruginosa*,

and *S. bovis*.[\[1249\]](#)

- Lemongrass strongly inhibits the growth and survival of several fungi (*A. alternata*, *A. niger*, *F. oxysporum*, and *P. roquefortii*) and yeasts (*C. albicans*, *C. oleophila*, *H. anomala*, *S. cerevisiae*, *S. pombe*, *S. uvarum*, and *M. fructicola*) *in vitro*.[\[1250\]](#)
- *In vitro* research suggests that lemongrass inhibits elastase activity (an enzyme involved in the breakdown of elastin and a causal factor in lung connective tissue diseases, disruption of the body's ability to kill pathogens, and delayed wound healing).[\[1251\]](#) The researchers concluded that topical administration may be beneficial for bullous pemphigoid (a skin condition that causes the formation of large blisters) and pulmonary emphysema (a chronic lung condition characterized by enlargement of the air sacs in the lungs).
- Lemongrass can prevent mosquito bites (up to 98.9%) for up to eighty-eight minutes, which is better than two chemical repellents, but not as effective as DEET (98.5%, for up to 182 minutes).[\[1252\]](#)
- Topical application of a shampoo and cream with lemongrass cleared pityriasis versicolor (a chronic yeast infection of the skin that causes scaling and discoloration) in 60% of people receiving the treatment.[\[1253\]](#)
- A topical gel containing 2% lemongrass oil improved gum health and effectively treated periodontitis (inflammation and infection of the gums that damages the tissue and bone that supports your teeth) in the fifteen people included in the study.[\[1254\]](#)
- Oral administration of lemongrass protected the stomach against ulcers caused by ethanol and the NSAID indomethacin by modulating prostaglandin production in mice.[\[1255\]](#)
- *In vitro* research reported that lemongrass oil provides a sun protection factor (SPF) of 6.282.[\[1256\]](#)
- Animal research suggests that lemongrass prevents edema (swelling caused by excess fluid trapped in body tissues), and strongly relieves pain, decreases inflammation, and reduces fever as well as lysine acetylsalicylate (a NSAID drug that reduces fever, inflammation, and pain).[\[1257\]](#)
- Lemongrass decreases pain at doses of 25 to 200 mg/kg in mice.[\[1258\]](#) The researchers found that lemongrass influences both the central and peripheral nervous systems to reduce pain, which makes it a useful natural pain reliever for neuropathy.
- Lemongrass may help control leishmaniasis (a disease caused by the bite of the sand-fly parasite characterized by skin sores or organ dysfunction) by promoting apoptosis of *Leishmania* species.[\[1259\]](#),[\[1260\]](#),[\[1261\]](#)
- *In vitro* research suggests lemongrass oil inhibits *Entamoeba histolytica* (an anaerobic parasitic protozoan that may cause intestinal disorders and bloodstream, liver, brain, and lung infections).[\[1262\]](#)
- Lemongrass protects against tissue alteration caused by N-methyl-N-nitrosourea (a cancer-causing alkylating agent) in mice by triggering apoptosis and reducing cellular reproduction.[\[1263\]](#)
- Animal research suggests that lemongrass oil reduces anxiety by influencing the GABAergic system (a system of structures that release or bind gamma-aminobutyric acid and regulate anxiety, muscle tension, memory, and convulsive activity).[\[1264\]](#)
- *In vitro* research suggests that a 2% lemongrass oil shampoo inhibits *Malassezia furfur* (a yeast associated with dandruff).[\[1265\]](#)
- Oral administration of 100 mg/kg lemongrass oil daily for twenty-one days reduced total blood

cholesterol in mice.[\[1266\]](#)

- Lemongrass oil reduces inflammation by inhibiting the production of the proinflammatory cytokines (IL-1beta and IL-6).[\[1267\]](#) Citral triggered PPAR α and γ gene expression to suppress the COX-2 enzyme (an enzyme present in cells when inflammation occurs, like arthritis).[\[1268\]](#)
- *In vitro* research concluded that lemongrass effectively inhibits *T. cruzi* trypomastigotes and amastigotes (a parasite that can cause fever, anorexia, myocarditis, swollen lymph nodes, and the simultaneous enlargement of the spleen and liver).[\[1269\]](#)
- Animal research concluded that lemongrass oil relieves anxiety, is sedating, and prevents convulsions.[\[1270\]](#)
- *In vitro* research suggests that peppermint, thyme, cinnamon, and lemongrass oils inhibited the respiratory tract pathogens *S. pyogenes* (a bacteria that causes strep throat, scarlet fever, impetigo, cellulitis, and tonsillitis) and *S. pneumoniae*.[\[1271\]](#)
- Oral administration of lemongrass oil (500 mg/kg) prevented malaria (86.6%) caused by a parasitic infection in mice, which is slightly less effective than the antimalarial drug chloroquine (100%).[\[1272\]](#)
- *In vitro* research found that lemongrass oil inhibits several microorganisms responsible for urinary tract infections (85.7% efficiency against *K. pneumoniae*, 50% against *E. aerogenes*, 89.9% against *E. coli*, 16.6% against *P. mirabilis*, and 50% against *M. morgani*).[\[1273\]](#)
- Lemongrass oil has better antimicrobial properties against clinically significant oral pathogens than standard oral antiseptics (chlorhexidine digluconate) according to *in vitro* research.[\[1274\]](#)
- Application of oregano and lemongrass oil to ground beef controls the growth of *S. enteritidis* (a very common foodborne pathogen that may cause stomach flu, fever with rash, serious bacterial infections of the blood, and systemic bacterial infection) during refrigerated storage.[\[1275\]](#)
- Lemongrass oil increases the effectiveness of phenoxyethanol (a chemical preservative often used in cosmetics).[\[1276\]](#)



LIME

Citrus aurantifolia

FAMILY: Rutaceae

NOTE: Top

AROMA INTENSITY: Medium

AROMA: Sharp, citrusy, fruity, tart

COMMON EXTRACTION METHOD: Cold-pressed/expressed or hydrodistilled from the fruit peel (rind)

POSSIBLE SUBSTITUTE OILS: Orange, lemon, tangerine, bergamot, grapefruit, neroli, petitgrain

BLENDS WELL WITH: Bergamot, camphor, carrot seed, cassia, chamomile (German, Roman), cinnamon, citronella, geranium, grapefruit, lavender, lemon, lemon verbena, lemongrass, melaleuca (tea tree), neroli, nutmeg, orange, palmarosa, patchouli, petitgrain, pine, ravensara, rose, rosemary, sage, Spanish sage, tangerine, vetiver, ylang ylang

RECOMMENDED DILUTION RANGE: 3%–50%; neat for some conditions

PRIMARY COMPOUNDS: [\[1277\]](#), [\[1278\]](#), [\[1279\]](#), [\[1280\]](#), [\[1281\]](#)

Cold-pressed/expressed

Limonene 39.9%–94.4%

Gamma-Terpinene 0.1%–20.6%

Sabinene 0.1%–19.6%

Beta-Pinene 0.1%–19.2%

Geranial 0.0%–6.1%

Para-Cymene 0.0%–5.6%

Distilled

Limonene 49.7%–53.8%

Gamma-Terpinene 0.0%–16.5%

Beta-Pinene 0.9%–12.6%

Alpha-Terpineol 0.4%–7.4%

Alpha-Terpinene 0.4%–3.0%

OTHER COMPOUNDS: *Cold-pressed/expressed*—Alpha-thujene, alpha-pinene, myrcene, beta-caryophyllene, (Z)-beta-ocimene, (E)-beta-ocimene, terpinolene, citronellal, linalool, trans-alpha-bergamotene, (E)-caryophyllene, thymol methyl oxide, terpinen-4-ol, neral, alpha-terpineol, germacrene D, beta-bisabolene, neryl acetate, (E,E)-alpha-farnesene, citronellol; *Distilled*—Alpha-thujene, alpha-pinene, myrcene, beta-caryophyllene, trans-alpha-bergamotene, beta-bisabolene, gamma-terpineol

REPORTED THERAPEUTIC PROPERTIES: Antiseptic, antiviral, astringent, anti-bacterial, **anti-inflammatory**, appetite stimulant, antispasmodic, disinfectant, **reduces fever**, stops excess bleeding, **aids immune function**, regenerative, circulatory aid, reduces appearance of blemishes, encourages restful sleep, **weight management**, antidepressant, reduces anxiety, **stress management**, uplifting

CAUTIONS:

- May be photosensitizing (cold-pressed/expressed). Avoid sun exposure to area of application for at least twelve hours after topical application.
- May interfere with enzymes responsible for metabolizing medications (NSAIDs, proton-pump inhibitors, acetaminophen, antiepileptics, immune modulators, blood-sugar medications, blood-pressure medications, antidepressants, antipsychotics, diabetic medications, antihistamines, antibiotics, and anesthetics).[\[1282\]](#)

SELECTED EVIDENCE:

- Oral administration of lime oil promoted weight loss, and prevented obesity caused by ketotifen (a drug associated with weight gain).[\[1283\]](#)
 - *In vitro* research suggests that lime oil significantly inhibits the pathogenic fungi *M. hiemalis* and *F. proliferatum*.[\[1284\]](#)
 - Distilled lime oil prevented the spread of colon cancer cells by triggering apoptosis *in vitro*.[\[1285\]](#)
 - *In vitro* research suggests that lime oil inhibits acetylcholinesterase (AChE) and mildly inhibits butyrylcholinesterase (BChE) enzyme activity.[\[1286\]](#),[\[1287\]](#) Lime oil also had the highest free-radical-scavenging (antioxidant) activity of three citrus oils tested. Inhibition of AChE prevents the breakdown of acetylcholine, which is essential for memory and thinking. People with neurodegenerative diseases make less acetylcholine, and the diseases often break it down at a faster rate leading to acetylcholine deficits. Selective inhibition of BChE is also desirable in neurodegenerative diseases because it interferes with acetylcholine activity. In addition, BChE is often found in the plaques and tangles in the brains of people with Alzheimer's disease.[\[1288\]](#)
 - *In vitro* research found that lime oil inhibits both gram-negative and gram-positive bacteria including *S. aureus*, *B. subtilis*, *K. pneumoniae*, *P. vulgaris*, *P. aeruginosa*, and *E. coli*.[\[1289\]](#)
-



MARJORAM (Sweet)

Origanum majorana, *Majorana hortensis*, *Origanum dubium*

FAMILY: Lamiaceae (Labiatae)

NOTE: Middle

AROMA INTENSITY: Medium

AROMA: Herbaceous, warm, medicinal

COMMON EXTRACTION METHOD: Steam distilled from the flowers and leaves

POSSIBLE SUBSTITUTE OILS: Oregano (terpinen-4-ol CT), melaleuca (tea tree), thyme (thuyanol-4 CT), basil (linalool CT), lavender

BLENDS WELL WITH: Basil, bergamot, cajeput, camphor, chamomile (German, Roman), cypress, eucalyptus, fennel, ginger, juniper, lavender, melaleuca (tea tree), orange, oregano, patchouli, petitgrain, pine, ravensara, rosemary, thyme

RECOMMENDED DILUTION RANGE: 3%–20%; neat for some conditions

PRIMARY COMPOUNDS*: [\[1290\]](#), [\[1291\]](#), [\[1292\]](#), [\[1293\]](#), [\[1294\]](#)

Terpinen-4-ol	28.9%–38.4%
Cis-Sabinene Hydrate	3.0%–30.2%
Linalyl-Acetate	0.3%–26.1%
Gamma-Terpinene	6.9%–14.3%
Sabinene	4.9%–12.0%
Alpha-Terpinene	2.8%–8.2%
Para-Cymene	3.5%–7.0%
Alpha-Terpineol	4.9%–6.9%
Trans-Sabinene Hydrate	3.5%–4.4%

*Marjoram composition varies widely depending on the season it is harvested, with spikes in certain compounds: winter—cis-sabinene hydrate (up to 54.4%); spring—thymol (up to 38.4%) and cis-sabinene hydrate (up to 25.3%); fall/autumn—terpinolene (43.1%).

OTHER COMPOUNDS: Alpha-phellandrene, alpha-pinene, beta-phellandrene, d-limonene, terpinolene, thujene, beta-caryophyllene, bicyclogermacrene, linalool, piperitol, thymol

REPORTED THERAPEUTIC PROPERTIES: Analgesic (pain relief), antibacterial, antifungal, anti-inflammatory, helps expel excess gas, antiviral, antiseptic, **antispasmodic**, **antiarthritic**, **antirheumatic**, supports heart muscle function, decongestant, expectorant, **nervine (calms and soothes the nerves)**, supports brain health, relieves constipation, **strengthens muscle tone**, relieves painful menstruation, wound healing, **antineuralgic**, circulatory stimulant, vasodilator, encourages restful sleep, lowers blood pressure, warming, relieves anxiety, stress management, sedating, **decreases overactive sex drive**, reduces obsessive thinking, helps relieve trauma and grief, combats mood swings

CAUTIONS:

- None currently known.

SELECTED EVIDENCE:

- Sweet marjoram oil kills two myeloid leukemia cells lines according to *in vitro* research.[\[1295\]](#)
- A clinical study concluded that both cortisol and systolic blood pressure declines after inhalation of a combination of lavender, ylang ylang, marjoram, and neroli oil in those with high blood pressure or pre-high blood pressure.[\[1296\]](#)
- A daily abdominal massage with a combination of lavender, clary sage, and marjoram (2:1:1 ratio) from the end of the last menstruation to the beginning of the next menstruation significantly reduced painful menstruation according to a randomized, double-blind clinical trial.[\[1297\]](#)
- Topical application of a 1.5% solution containing lavender, marjoram, eucalyptus, rosemary, and peppermint (2:1:2:1:1 ratio), in a carrier oil consisting of 45% apricot, 45% almond, and 10% jojoba carrier oils significantly decreased pain and depression in people with arthritis.[\[1298\]](#)
- *In vitro* research concluded that marjoram essential oil inhibited *P. insidiosum* (a pathogenic oomycete that infects mammals and causes gangrenous ulcers on the skin and may restrict blood flow in the surrounding arteries).[\[1299\]](#)
- Rats administered 160 $\mu\text{L}/\text{kg}$ of marjoram oil twice daily for twenty-eight days were protected against oxidative damage of the kidneys caused by prallethrin (an insecticide known to cause oxidative damage and toxicity in the kidneys of animals).[\[1300\]](#)
- Marjoram essential oil protected bone marrow cells from DNA and chromosomal damage caused by prallethrin (an insecticide that causes damage to DNA and chromosomes in animals).[\[1301\]](#)
- Animal research suggests that oral administration of marjoram oil (0.16 mL/kg) prevented damage to reproductive, liver, and brain tissues caused by ethanol in male rats.
- *In vitro* research suggests that marjoram oil inhibits acetylcholinesterase (AChE) and is a potent antioxidant.[\[1302\]](#) Inhibition of AChE prevents the breakdown of acetylcholine, which is essential for memory and thinking. People with neurodegenerative diseases make less acetylcholine, and the diseases often break it down at a faster rate leading to acetylcholine deficits.
- An ethanolic extract of marjoram prevented ulcers caused by ethanol and indomethacin (an NSAID), and replenished lost stomach mucus in animals.[\[1303\]](#)
- Oral administration of 0.16 mL/kg of marjoram oil protected liver and kidney cells against DNA damage caused by lead and improved liver and kidney function in mice.[\[1304\]](#)
- *In vitro* research suggests that marjoram oil significantly inhibits *A. niger*, *B. natriegens*, *E. carotovora*, *E. coli*, *Streptococcus A*, *S. dysenteriae*, *S. enteritidis*, and *Moraxella* sp.[\[1305\]](#),[\[1306\]](#)



MELALEUCA (Tea Tree)

Melaleuca alternifolia

FAMILY: Myrtaceae

NOTE: Middle

AROMA INTENSITY: Medium

AROMA: Fresh, medicinal, earthy, herbaceous

COMMON EXTRACTION METHOD: Steam distilled from the leaves

POSSIBLE SUBSTITUTE OILS: Marjoram, equal parts oregano (terpinen-4-ol CT) and petitgrain (mandarin)

BLENDS WELL WITH: Bergamot, cajeput, carrot seed, chamomile (German, Roman), cedarwood, clary sage, clove, cypress, eucalyptus, fennel, grapefruit, lavender, lemon, lime, myrrh, orange, patchouli, petitgrain, pine, ravensara, rosemary, sandalwood, tangerine, thyme

RECOMMENDED DILUTION RANGE: 3%–50%; Neat for some conditions

PRIMARY COMPOUNDS: [\[1307\]](#), [\[1308\]](#), [\[1309\]](#), [\[1310\]](#), [\[1311\]](#)

Terpinen-4-ol	37.0%–46.9%
Gamma-Terpinene	10.0%–28.0%
1,8-Cineole	0.1%–16.5%*
Para-Cymene	0.5%–12.0%
Alpha-Terpinene	7.9%–10.4%

*Most studies report 1,8-cineole ranges of 3.0%–3.6%, and the ISO 4730 standard is ≤15.0%.

OTHER COMPOUNDS: Alpha-pinene, d-limonene, terpinolene, delta-cadinene, aromadendrene, ledene, alpha-terpineol

REPORTED THERAPEUTIC PROPERTIES: Analgesic (pain relief), **antibacterial**, sports injury recovery, anti-inflammatory, **anti-infectious**, **anticancer**, **antifungal**, improves nutrient absorption, **antiviral**, **antimicrobial**, expectorant, reduces hair loss, antiseptic, **helps reduce the appearance of blemishes**, helps burns heal, stimulates secretion of hormones, aids detoxification, **helps boils, blisters, and abscesses heal**, helps remove warts, relieves insect bites, helps hemorrhoids heal, **relieves inflammation of the gums**, stimulates immune function, **relieves diarrhea caused by pathogens**, protects against radiation damage and helps radiation burns heal, eases cough, relieves shock, builds confidence, reduces feelings of oppression

CAUTIONS:

- A number of medical references and aromatherapy texts suggest oral administration of tea tree oil is contraindicated. Large doses, usually more than 10 ml (and up to 70 ml) in a single dose, have caused toxicity, and one case of toxicity was reported with an unidentified “small quantity” of tea tree oil in a 4-year old boy. Based on the amounts ingested, and the fact that ingestion of oils is not recommended for children under age 6, it is unlikely that tea tree oil will cause problems orally except in the case of very small children who ingest significant quantities. [\[1312\]](#), [\[1313\]](#), [\[1314\]](#), [\[1315\]](#)

SELECTED EVIDENCE:

- A tea tree gel proved more effective at preventing dental plaque and inhibiting oral bacteria than

- Colgate Total in a small clinical trial of thirty-four volunteers.[\[1316\]](#) Another study concluded the tea tree oil gel improves overall gum health, but has little effect on plaque accumulation.[\[1317\]](#)
- A tissue conditioner combined with a 20% solution of tea tree oil completely inhibited *C. albicans* and reduced inflammation in nine patients with dental stomatitis (an oral infection of *Candida* or thrush that causes inflammation of oral mucous membranes that primarily affects denture wearers or those who don't practice appropriate oral care).[\[1318\]](#)
 - *In vitro* research concluded that tea tree oil significantly reduced influenza virus A/PR/8 (H1N1) replication in administered within two hours of the infection; however, it did not prevent attachment of the virus to healthy cells (adsorption).[\[1319\]](#),[\[1320\]](#)
 - Application of tea tree oil to the mouth with a cotton swab reduced oral candidiasis caused by drug-resistant *C. albicans* in mice.[\[1321\]](#)
 - Tea tree oil may relieve psoriasis because of its ability to inhibit proinflammatory molecules, pathways, and cellular mechanisms involved in the cause of psoriasis.[\[1322\]](#)
 - A small clinical study reported that topical application of tea tree oil significantly reduced histamine-induced allergic skin eruptions characterized by swelling, redness, and the appearance of an irregular wheal within ten minutes of application.[\[1323\]](#) Another study also concluded that tea tree oil prevents the histamine reaction involved in some skin eruptions.[\[1324\]](#)
 - *In vitro* research discovered that tea tree oil causes transcriptional alteration of *S. aureus* and *Candida* sp. that damages the pathogens protein structure, membrane, and alters its membrane functions for destruction.[\[1325\]](#),[\[1326\]](#) Another *in vitro* study observed that tea tree oil efficiently kills *S. aureus* during the stationary phase (when the size of the bacterial population remains relatively constant after a period of growth).[\[1327\]](#) *In vitro* studies concluded that tea tree oil inhibits *S. aureus* and *E. coli* by damaging their plasma membrane and emptying their cytoplasmic (the fluid that fills a cell) contents, and by inhibiting the pathogens ability to participate in cellular respiration (the process that cells use to release energy from food molecules for use by the living organism they inhabit).[\[1328\]](#),[\[1329\]](#),[\[1330\]](#)
 - A case report indicates that tea tree oil may help remove warts caused by the human papilloma virus (HPV) in children. When tea tree oil was applied on hand warts once daily for twelve days the wart was removed.[\[1331\]](#)
 - Washing hands with soap and tea tree was as effective as washing hands with soap that contains triclosan (an antibacterial agent) in removing hand germs according to clinical research.[\[1332\]](#),[\[1333\]](#) Rubbing alcohol with soap was more effective than tea tree and soap.
 - A small clinical trial found that tea tree oil significantly increased the healing of wounds infected with *S. aureus*.[\[1334\]](#)
 - A case report describes the use of a combination of the essential oil of lemongrass, eucalyptus, melaleuca (tea tree), clove, thyme and BHT, triclosan, and undenatured alcohol to treat a chronic infection of the lower tibia (osteomyelitis) that was not responding to several courses of IV antibiotics. Amputation of the lower leg was being considered when a physician recommended the leg be opened up and the combination inserted directly into the bone (through a drilled hole, 1 ml per day for forty-eight hours). At three months, the wound and bone healed, and symptoms were resolved.[\[1335\]](#)
 - *In vitro* research concluded that tea tree concentrate protects mice against Group A *Streptococcus pyogenes* infection (a bacteria that causes strep throat, scarlet fever, impetigo, cellulitis, and tonsillitis), and prevented skin damage caused by the bacteria called necrotizing fasciitis (commonly referred to as flesh-eating bacteria, which causes rapid destruction of the

body's soft tissue).[\[1336\]](#)

- Tea tree oil reduces acne lesions in people with mild-to-moderate acne with good tolerability.[\[1337\]](#) One study found that tea tree oil was as effective as benzoyl peroxide with fewer side effects, but the results were achieved more slowly.[\[1338\]](#) A third study concluded that a 5% tea tree oil gel reduced both the number and severity of acne in thirty people.[\[1339\]](#)
- An *in vitro* study concluded that tea tree oil enhances the effectiveness of the antibiotic tobramycin against *E. coli* and *S. aureus*, which makes it a possible natural agent for the treatment of skin lesions, and infections of the conjunctiva (the membrane that covers the inside of the eyelids and the white part of the eyeball) and respiratory tract via inhalation.[\[1340\]](#)
- Topical application of tea tree oil is useful for the control of staphylococcal infections, including antibiotic-resistant infections according to *in vitro* research.[\[1341\]](#)
- *In vitro* research concluded that tea tree oil had broad antimicrobial activity against *M. hominis* (twenty-five vaginal, urethral, and cervical strains, and one reference strain), *M. pneumoniae* (one clinical and one reference strain), and *M. fermentans* (four vaginal strains and two reference strains).[\[1342\]](#)
- Topical application of a product containing 1% lavender and 10% tea tree oils worked better than the chemical alternative of pyrethrins and piperonyl butoxide, and as well as a suffocation product to eliminate head lice (louse).[\[1343\]](#) Another study concluded that the same combination of oils was slightly less effective than the suffocation method (44.4% versus 68.3%).[\[1344\]](#)
- A 1% solution of tea tree killed 100% of head lice in thirty minutes. When it was combined with nerolidol in a 1:2 ratio (tea tree 0.5% plus 1% nerolidol) the solution killed 100% of the head lice in thirty minutes and the louse eggs after five days.[\[1345\]](#)
- Topical application of a spray with tea tree and lavender oils twice daily for three months decreased unwanted, male-pattern hair growth in women (hirsutism).[\[1346\]](#)
- *In vitro* research reported that tea tree oil provides a sun protection factor (SPF) of 1.702.[\[1347\]](#)
- Animal research suggests that the topical application of 10% tea tree and DMSO solution triggers the accumulation of dendritic cells and T cells in tumors directly beneath the skin (subcutaneous), and kills tumor cells, resulting in rapid destruction of the tumor.[\[1348\]](#) Another study found that the combination of tea tree oil and DMSO significantly inhibited the growth of an aggressive subcutaneous tumor that was resistant to chemotherapy in mice.[\[1349\]](#)
- Tea tree oil prevents the growth of melanoma cells, interferes with the migration and invasion process of melanoma cells, and decreases drug resistance by melanoma cells *in vitro*.[\[1350\]](#)[\[1351\]](#)
- *In vitro* research suggests that tea tree oil significantly prevents the spread of and kills aggressive mesothelioma and melanoma tumor cancer cells. The research concluded that tea tree oil triggers cell cycle arrest (a natural process in the cell cycle where the cell stops self-duplication and division).[\[1352\]](#)
- Topical application of a combination of lavender, geranium, tea tree, and peppermint oils improved the oral health of hospice patients with terminal cancer.[\[1353\]](#)
- *In vitro* research concluded that a 12.5% tea tree solution inhibits *C. albicans* and the microscopic lesions of candidiasis.[\[1354\]](#)[\[1355\]](#) Another study found that tea tree prevents *C. albicans* from forming germ tubes, which are used by the spores to reproduce and spread.[\[1356\]](#)
- Tea tree oil, or terpinen-4-ol, reduces the production of the proinflammatory molecules IL-1 β , IL-6, and IL-10 according to *in vitro* research.[\[1357\]](#)[\[1358\]](#)
- A review of the dermatological uses of tea tree oil concluded that tea tree oil may be useful for acne, seborrheic dermatitis (a chronic inflammatory skin condition that causes scaly, red patches

- on the skin and dandruff), chronic gingivitis, wound healing, and skin cancer.[\[1359\]](#)
- Tea tree oil is a mild inhibitor of HSV-1, HSV-2, and *Pseudomonas* sp. *in vitro*.[\[1360\]](#),[\[1361\]](#)
- Tea tree oil reduces inflammation by preventing oxidation and the release of proinflammatory molecules by cells without affecting the cells ability to release anti-inflammatory molecules.[\[1362\]](#),[\[1363\]](#),[\[1364\]](#)
- *In vitro* research concluded that tea tree oil effectively inhibited both drug-resistant and nonresistant fungal infections obtained from people with compromised immune system due to cancer treatment.[\[1365\]](#),[\[1366\]](#) The study authors recommended that tea tree oil be considered for use as a natural remedy to prevent and treat oral fungal infections in immunocompromised people.
- Tea tree oil effectively inhibits a large range of oral bacteria, suggesting that tea tree may promote oral hygiene.[\[1367\]](#),[\[1368\]](#) Another study found that a mouthwash with tea tree oil reduced plaque formation and gum inflammation.[\[1369\]](#)
- An *in vitro* study suggests that tea tree oil may be an effective treatment for inflammation of the ear canal (otitis externa) caused by allergies, infection, or swimmers ear.[\[1370\]](#)
- Multiple components within tea tree oil, or tea tree oil itself, possess antifungal activity against a range of fungi (both drug-resistant and drug-susceptible) and dermatophytes according to *in vitro* studies.[\[1371\]](#),[\[1372\]](#),[\[1373\]](#),[\[1374\]](#),[\[1375\]](#),[\[1376\]](#)
- *In vitro* research suggests that tea tree oil inhibits some *Malassezia* species (fungi that inhabit the skin and may cause or exacerbate many skin conditions like tinea versicolor, *Pityrosporum* folliculitis, and seborrheic dermatitis).[\[1377\]](#),[\[1378\]](#)
- Tea tree oil was more effective than zinc oxide and clobetasone butyrate (a topical corticosteroid used to treat inflammatory skin conditions) in relieving allergic contact dermatitis.[\[1379\]](#)
- Tea tree oil inhibited three bacterium that are commonly associated with hospital-acquired infections *S. marcescens*, *P. aeruginosa*, and *K. pneumoniae*.[\[1380\]](#)
- After sixteen weeks of treatment with a cream containing 5% tea tree oil and 2% butenafine hydrochloride (an antifungal drug used to treat athlete's foot and other fungal infections) 80% of people experienced complete remission of toenail onychomycosis (a fungal infection of the nail) without relapse.[\[1381\]](#) Another study reported similar findings that neat topical application of tea tree oil (twice daily for six months) was as effective as the standard treatment option of clotrimazole.[\[1382\]](#)
- Topical application of a 25% or 50% tea tree oil solution improved the symptoms of tinea pedis (commonly called athlete's foot, a fungal infection of the feet) in up to 72% of people.[\[1383\]](#)
- *In vitro* and clinical research suggests that tea tree oil inhibits methicillin-resistant *Staphylococcus aureus* (MRSA).[\[1384\]](#),[\[1385\]](#),[\[1386\]](#),[\[1387\]](#),[\[1388\]](#)
- *In vitro* and animal research suggests that terpinen-4-ol and tea tree oil can control *C. albicans* vaginal infections, even infections by pathogens resistant to fluconazole and itraconazole (antifungal drugs used for the treatment of vaginal candidiasis).[\[1389\]](#),[\[1390\]](#),[\[1391\]](#)
- A gel with tea tree oil, hyaluronic acid, and methyl-sulfonyl-methane effectively reduced hemorrhoid symptoms (anal pain, pain during a bowel movement, irritation, and inflammation) in eighteen people with hemorrhoids.[\[1392\]](#)
- Topical application of tea tree oil with organically bound iodine (twice daily) cleared molluscum contagiosum (a viral skin infection that causes round bumps on the skin) in 90% of children included in the study.[\[1393\]](#)

- A daily eyelid massage with a 5% solution of tea tree oil relieved ocular itching in all twenty-four patients receiving treatment, and completely cleared the itching in 67% of patients.[\[1394\]](#) ***Never place oils directly in your eye, and it is advised not to apply them on the eyelid to avoid damage to the eye.*** Contrarily, the standard treatment of chlortetracycline hydrochloride (a topical antibiotic ointment that reduces inflammation) provided little relief after four weeks of use.
 - A review recommended the topical application of diluted tea tree, peppermint, or melissa oil three to four times daily for recurrent herpetic infections (canker sores, cold sores, and genital herpes).[\[1395\]](#)
 - Topical application of neat tea tree oil prevented hypersensitive reactions to nickel in humans.[\[1396\]](#)
 - A 5% tea tree oil solution effectively eliminated *sarcoptes scabiei* var *hominis* (commonly called scabies—a contagious skin infection caused by the mite burrowing into the skin and laying its eggs, which leads to intense itching and secondary infection).[\[1397\]](#),[\[1398\]](#)
 - Clinical research suggests that a shampoo with 5% tea tree oil is an effective treatment for dandruff.[\[1399\]](#)
 - Swishing with an oral solution containing tea tree oil four times daily for two to four weeks cured or improved oropharyngeal thrush in 60% of people with AIDS.[\[1400\]](#)
 - *In vitro* research concluded that tea tree exerts its antiseptic properties partially through activation of white blood cells, which help fight infections.[\[1401\]](#)
 - An extract of tea tree oil composed predominantly of monoterpenes and sesquiterpenes modulated immune system activity by inhibiting NF-KB (a protein complex that is involved in cellular responses to stimuli, stress, and free radicals and plays a critical role in immune system activity) and IKB phosphorylation (a process that activates the IKB enzyme complex, which is a hallmark of chronic inflammatory diseases and cancer).[\[1402\]](#)
 - Terpinen-4-ol triggers autophagic (the cell partially digests itself for programmed cell death) and apoptosis of leukemia cancer cells.[\[1403\]](#)
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MELISSA (Lemon Balm)

Melissa officinalis

FAMILY: Lamiaceae (Labiatae)

NOTE: Middle

AROMA INTENSITY: Medium

AROMA: Fresh, herbaceous, lemony

COMMON EXTRACTION METHOD: Steam distilled from the flowers and leaves

POSSIBLE SUBSTITUTE OILS: Lemongrass, lemon verbena, lime (distilled)

BLENDS WELL WITH: Citronella, geranium, lavender, lemon, lemon verbena, myrtle, orange, neroli, palo santo, rose, ylang ylang

RECOMMENDED DILUTION RANGE: 3%–50%; neat for some conditions

PRIMARY COMPOUNDS: [\[1404\]](#), [\[1405\]](#), [\[1406\]](#), [\[1407\]](#), [\[1408\]](#)

Geranial	6.6%–45.2%
Neral	4.6%–33.8%
Caryophyllene Oxide	1.3%–31.7%
Citronellal	0.4%–20.3%
Beta-Caryophyllene	0.1%–15.3%
Geraniol	0.1%–11.8%
Germacrene D	0.1%–8.3%
Nerol	0.0%–7.9%
Citronellol	0.1%–7.7%
Geranyl Acetate	0.1%–7.1%
Delta-3-Carene	0.0%–5.0%
Citronellyl Acetate	0.0%–3.7%

OTHER COMPOUNDS: (E)-beta-ocimene, neryl acetate, 6-methyl-5-hepten-2-ol, delta-cadinene, 6-methyl-5-hepten-2-one, alpha-copaene, methyl citronellate, alpha-terpineol, alpha caryophyllene, 1-octen-3-ol

REPORTED THERAPEUTIC PROPERTIES: Antiseptic, antiviral, antibacterial, antifungal, **antispasmodic**, antitumor, **strengthens the heart**, expels excess gas, balances hormones, helps lower high blood pressure, **reduces the appearance of blemishes**, encourages the flow of bile, reduces fever, aids digestion, regulates menstruation, nervine (calms and soothes the nerves), relieves skin conditions, **regulates breathing**, encourages restful sleep, **antidepressant**, relieves vertigo, warming, relaxing, reduces anxiety, comforts during grief, sedating, eases agitation, uplifting, combats anger and rage, relieves nightmares, calms hysteria

CAUTIONS:

- Caution is advised during pregnancy and lactation due to high citral content. Large doses of citral may negatively affect fetal development according to animal studies.[\[1409\]](#)
- May mildly interfere with enzymes responsible for metabolizing medications (NSAIDs, proton-pump inhibitors, acetaminophen, antiepileptics, immune modulators, blood sugar medications, blood-pressure medications, antidepressants, antipsychotics, diabetic medications, antihistamines, antibiotics, and anesthetics).[\[1410\]](#),[\[1411\]](#),[\[1412\]](#)
- Use cautiously with diabetic medications. Large oral doses of citral may improve insulin sensitivity and lower blood-glucose levels according to animal research.[\[1413\]](#) Also, low doses of melissa essential oil may decrease blood-sugar levels through enhanced glucose uptake and metabolism according to animal research.[\[1414\]](#)
- Dilution is recommended for topical application due to high citral content.

SELECTED EVIDENCE:

- Melissa oil may prevent the formation of tumors and destroys lung carcinoma, breast, colorectal adenocarcinoma, promyelocytic leukemia, and myeloid leukemia cancer cells *in vitro*.[\[1415\]](#)
- Melissa oil causes apoptosis of glioblastoma multiforme cells (GBM). GBM is a common and aggressive tumor that begin in astrocytes (star-shaped cells that make up the supportive tissue of the brain) *in vitro*.[\[1416\]](#)
- Topical application of a lotion with melissa oil to the faces and arms of people with severe dementia reduced agitation in 35% of study participants.[\[1417\]](#)
- *In vitro* and animal research suggests that melissa oil may reduce agitation by reducing the release of neurotransmitters and interacting with brain cell receptors (nicotinic, muscarinic), and therefore reducing arousal, anxiety and stimulation of the brain.[\[1418\]](#),[\[1419\]](#),[\[1420\]](#)
- Animal research suggests that melissa essential oil reduces pain associated with diabetic neuropathy in mice.[\[1421\]](#)
- *In vitro* research suggests that melissa oil may prevent and manage neurodegenerative diseases caused by oxidative stress by inhibiting acetylcholinesterase (AChE) and butyrylcholinesterase (BChE) enzyme activity, and preventing lipid peroxidation.[\[1422\]](#),[\[1423\]](#) Inhibition of AChE prevents the breakdown of acetylcholine, which is essential for memory and thinking. People with neurodegenerative diseases make less acetylcholine, and the diseases often break it down at a faster rate leading to acetylcholine deficits. Selective inhibition of BChE is

also desirable in neurodegenerative diseases because it interferes with acetylcholine activity. In addition, BChE is often found in the plaques and tangles in the brains of people with Alzheimer's disease.[\[1424\]](#)

- Melissa oil enhances glucose uptake and metabolism and prevents the production of sugar from noncarbohydrate sources within the body (gluconeogenesis) in type 2 diabetic mice.[\[1425\]](#)
 - *In vitro* research suggests that melissa oil prevents the infection of healthy cells by the herpes virus.[\[1426\]](#)
 - Melissa oil helps decrease inflammation by inhibiting the 5-lipoxygenase (5-LOX) enzyme that is involved in the inflammation response according to *in vitro* research.[\[1427\]](#)
 - A clinical study concluded that a twice-daily massage with a melissa oil cream (containing a total of 200 mg of oil) reduced agitation and improved the quality of life in people with severe dementia.[\[1428\]](#)
 - Melissa oil reduces inflammation, pain, and edema (swelling caused by excess fluid trapped in body tissues) in mice at a dose of 200 to 400 mg/kg.[\[1429\]](#)
 - *In vitro* research concluded that melissa oil prevented the attachment of HSV-1 to host cells (adsorption) and killed HSV-1 at low concentrations.[\[1430\]](#),[\[1431\]](#) Melissa also prevented HSV-2 replication (the duplication of genetic material to divide and produce to identical cells called daughter cells).[\[1432\]](#)
 - Animal research suggests that oral administration of melissa oil reduces blood triglycerides by preventing the creation of fatty acids.[\[1433\]](#)
 - Melissa oil significantly inhibits *C. albicans* and *T. brucei* *in vitro*.[\[1434\]](#),[\[1435\]](#)
 - *In vitro* research concluded that melissa is a potent free-radical scavenger (antioxidant), prevents lipid peroxidation (free-radical deterioration of lipids, which can disrupt cellular communication, destroy cells, and damage proteins or DNA), and inhibits *S. sonnei* and Trichophyton species.[\[1436\]](#)
 - Animal research suggests that both melissa oil and citral reduce intestinal spasms in rats.[\[1437\]](#)
 - A review recommended the topical application of diluted tea tree, peppermint, or melissa oil three to four times daily for recurrent herpetic infections (canker sores, cold sores, and genital herpes).[\[1438\]](#)
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MYRRH

Commiphora myrrha, *Commiphora molmol*

FAMILY: Burseraceae

NOTE: Base

AROMA INTENSITY: Medium

AROMA: Rich, balsamic, warm, earthy

COMMON EXTRACTION METHOD: Steam distilled from the resin

POSSIBLE SUBSTITUTE OILS: Cistus, frankincense, lavender

BLENDS WELL WITH: Camphor, cedarwood, frankincense, juniper, lavender, myrtle, palo santo, sandalwood, spikenard

RECOMMENDED DILUTION RANGE: 5%–Neat

PRIMARY COMPOUNDS: [\[1439\]](#), [\[1440\]](#), [\[1441\]](#), [\[1442\]](#)

Furanodiene	15.0%–49.1%
Furanodiene	8.5%–40.1%
Furanodiene	0.0%–19.7%
Lindestrene	3.6%–12.9%
Beta-Elemene	4.4%–10.9%
Germacrene Isomer I	0.4%–6.5%
Germacrene	0.0%–5.8%
Alpha-Copaene	0.0%–5.5%
Germacrene B	0.9%–4.3%

OTHER COMPOUNDS: Delta-elemene, beta-bourbonene, trans-caryophyllene, alpha-humulene, germacrene D, beta-selinene, gamma-cadinene, furanoeudesma-1,4-diene, t-cadinol, 2-methoxyfuranodiene

REPORTED THERAPEUTIC PROPERTIES: Anti-inflammatory, antimicrobial, antitumor, **antiseptic**, antispasmodic, **antifungal**, antiviral, astringent, expels excess gas, **cell rejuvenator**, expectorant, decongestant, aids digestion, strengthens nails, circulatory stimulant, wound healing, **helps relieve chronic skin conditions**, sedating, calms the mind, encourages feelings of peace, reduces mental distractions, enhances meditation and focus, promotes creativity, reduces irritability

CAUTIONS:

- Avoid during pregnancy and lactation. Myrrh usually contains up to 10% beta-elemene, which may prevent the formation of blood vessels necessary for fetal development according to animal research.[\[1443\]](#),[\[1444\]](#)

SELECTED EVIDENCE:

- Myrrh oil caused apoptosis of breast and skin cancer cells at a greater rate than frankincense oil (*B. carterii*) *in vitro*.[\[1445\]](#)
 - A sitz bath with or soap application of lavender, myrrh, neroli, rose, grapefruit, mandarin, orange, and Roman chamomile improves healing of the perineum following delivery and episiotomy.[\[1446\]](#)
 - When combined with frankincense, myrrh inhibits *C. neoformans*, *P. aeruginosa*, and *B. cereus*.[\[1447\]](#)
 - Myrrh oil prevents sebum squalene peroxidation by singlet oxygen (the main trigger of sebum squalene peroxidation during sun exposure, and a cause of DNA damage), which plays an important role in skin damage caused by sunburn and UV exposure.[\[1448\]](#) Another study found that myrrh oil neutralizes singlet oxygen better than vitamin E.[\[1449\]](#)
 - Oral administration of myrrh oil and resin (12 mg/kg daily for six days) reduced Fasciola egg count and all signs and symptoms of fascioliasis—a parasitic infection that causes abdominal pain, fever, vomiting, diarrhea, swelling of the liver, hives, and eosinophilia (abnormally high number of the disease-fighting white blood cells called eosinophils).[\[1450\]](#)
 - *In vitro* research concluded that myrrh oil modulates the pathways involved in inflammation of the gums.[\[1451\]](#)
 - Myrrh oil helps decrease inflammation by inhibiting the 5-lipoxygenase (5-LOX) enzyme that is involved in the inflammation response according to *in vitro* research.[\[1452\]](#)
 - *In vitro* research suggests that myrrh oil inhibits *T. vaginalis* (a protozoan parasite that is spread by sexual intercourse and causes a foul-smelling discharge from the vagina, painful urination, and vaginal itching in women; men typically have no symptoms).[\[1453\]](#)
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MYRTLE

Myrtus communis

FAMILY: Myrtaceae

NOTE: Top-Middle

AROMA INTENSITY: Medium

AROMA: Sweet, slightly medicinal, fresh

COMMON EXTRACTION METHOD: Steam distilled from the leaves

POSSIBLE SUBSTITUTE OILS: Cypress, rosemary (alpha-pinene CT), niaouli (viridiflorol CT), balsam fir

BLENDS WELL WITH: Bergamot, black pepper, cedarwood, clary sage, clove, eucalyptus, frankincense, ginger, lavender, lemon, lemongrass, lime, melissa, myrrh, neroli, peppermint, rosemary, silver fir, white fir, ylang ylang

RECOMMENDED DILUTION RANGE: 3%–Neat

PRIMARY COMPOUNDS: [\[1454\]](#), [\[1455\]](#), [\[1456\]](#), [\[1457\]](#), [\[1458\]](#), [\[1459\]](#), [\[1460\]](#)

Alpha-pinene	14.7%–64.5%
1,8-Cineole	6.1%–40.4%
Limonene	6.7%–24.1%
Myrtenyl Acetate	5.4%–21.6%
Linalool	13.3%–17.6%

OTHER COMPOUNDS: Isobutyl isobutyrate, terpineol, methyl chavicol (estragole), geraniol, myrtenol, linalool acetate, alpha-terpinyl acetate, neryl acetate, geranyl acetate, eugenol, caryophyllene, alpha-humulene, 4-isopropyl-2,5-dimethoxybenzyl acetate, caryophyllene oxide, 5,8-tri decadiene, methyl eugenol

REPORTED THERAPEUTIC PROPERTIES: Antiseptic, astringent, antibacterial, antimicrobial,

bronchodilator, expectorant, decongestant, **eases cough**, nervine (calms and soothes the nerves), reduces the appearance of blemishes, **balances respiratory function**, **stimulates thyroid function and the release of thyroid hormones**, supports urinary tract health, aphrodisiac, **encourages restful sleep**, invigorating, enhances mental clarity, sedating, reduces self-destructive behavior

- Some aromatherapy texts suggest to be cautious with the oral administration of myrtle because it may contain methyl chavicol (estragole) and methyl eugenol. These compounds (normally less than 1.0% of each in myrtle) may potentially cause cancer in very large amounts.[\[1461\]](#),[\[1462\]](#) However, animal research suggests that it takes extreme amounts (6.6 mL/kg) for ten to twenty-one days to cause liver toxicity.[\[1463\]](#) The same study concluded that daily intake of 1 to 2 ml of myrtle by humans is too low to cause liver problems. Based on the available evidence reasonable oral doses of myrtle pose very little risk.
- Avoid with epilepsy and Parkinson's due to 1,8-cineole content.[\[1464\]](#),[\[1465\]](#),[\[1466\]](#)
- May interfere with pentobarbital and other barbiturates (medications for anxiety and insomnia) if 1,8-cineole content is high.[\[1467\]](#),[\[1468\]](#)
- May interact with diabetes medications and cause low blood sugar.[\[1469\]](#)
- May interact with antibiotics and increase their effectiveness.[\[1470\]](#)
- While myrtle can contain up to 40.4% 1,8-cineole, it has not been associated with the same respiratory distress problems in young children as eucalyptus has.

SELECTED EVIDENCE:

- *In vitro* research suggests that myrtle oil enhances the antimicrobial activity of conventional antibiotics and resensitizes multi-drug-resistant pathogens to traditional antibiotics.[\[1471\]](#),[\[1472\]](#)
- Myrtle oil inhibited both drug-resistant and nonresistant strains of *M. tuberculosis* (the cause of tuberculosis) *in vitro*.[\[1473\]](#)
- Animal research suggests that topical application of myrtle oil reduces inflammation by inhibiting excess leukocyte migration to damaged tissue, and inhibiting the proinflammatory molecules TNF-alpha and IL-6.[\[1474\]](#) Leukocytes travel to the site of damaged tissue to encourage tissue repair; however, when they migrate excessively to the area it causes an abnormal inflammatory response. An *in vitro* study suggests that it also inhibits excess nitric oxide production.[\[1475\]](#)
- Myrtle oil inhibits *E. rhusiopathiae* (a pathogenic bacteria that causes minor to serious skin infections and systemic infections) *in vitro*.[\[1476\]](#)
- *In vitro* research concluded that myrtle oil inhibits *P. gingivalis* (a pathogenic bacterium associated with periodontal disease) *in vitro*.[\[1477\]](#)
- Myrtle oil inhibits *C. albicans*, *C. tropicalis*, *C. glabrata*, and *C. parapsilosis* according to *in vitro* research.[\[1478\]](#),[\[1479\]](#)
- An animal study found that 150 mg/kg of myrtle oil significantly reduced blood-sugar levels, decreased inflammation about as well as the NSAID indomethacin, and relieved pain in mice.[\[1480\]](#)
- Oral administration of 50 mg/kg reduced blood-sugar levels and blood triglyceride levels in diabetic and normal rabbits. The study attributed this affect to myrtle's ability to inhibit the enzyme responsible for breaking down starch and disaccharides to glucose (alpha-glucosidase), enhance glycolysis (the metabolic pathway used to convert glucose to pyruvate, which is

typically conserved for glucose production in diabetes), and improve glycogenesis (the formation of glycogen from glucose, which is the storage form of glucose in humans).[\[1481\]](#)

- *In vitro* research concluded that myrtle oil prevents both oxidative damage and genetic mutation.[\[1482\]](#),[\[1483\]](#),[\[1484\]](#)
 - Myrtle oil eradicates *H. pylori* (a bacterium associated with peptic ulcers, stomach cancer, and stomach inflammation) *in vitro*.[\[1485\]](#)
 - *In vitro* research suggests that myrtle oil inhibits *P. falciparum* (a protozoan parasite that causes malaria in humans).[\[1486\]](#)
 - Myrtle oil significantly inhibits *T. vaginalis* (a protozoan parasite that is spread by sexual intercourse and causes a foul-smelling discharge from the vagina, painful urination, and vaginal itching in women; men typically have no symptoms) *in vitro*.[\[1487\]](#)
 - A mixture of myrtle, eucalyptus, sweet orange, and lemon increased mucous, bacterial, and inflammatory molecule clearance from the respiratory system *in vitro*.[\[1488\]](#)
 - A methanolic extract of myrtle reduced intestinal and aorta spasms, enhanced bronchodilation (relaxation of the bronchi and bronchioles to increase airflow in the lungs) and vasodilation (relaxation of the blood vessel walls, which causes decreased blood pressure) in rabbit intestines and hearts, possibly by blocking calcium channel.[\[1489\]](#) Agents that block calcium channels prevent calcium from entering heart and blood vessel cells, which results in relaxed blood vessels and greater supply of blood and oxygen to the heart. They are useful for such conditions as high blood pressure, migraines, chest pain, cardiomyopathy, and Raynaud's syndrome.
-



NEROLI

Citrus x aurantium (flowers), *Citrus aurantium amara*, *Citrus aurantium bigaradia*

FAMILY: Rutaceae

NOTE: Middle

AROMA INTENSITY: Strong

AROMA: Sweet, floral, citrusy, fresh

COMMON EXTRACTION METHOD: Steam distilled from the flowers; may also be solvent extracted

POSSIBLE SUBSTITUTE OILS: Petitgrain (bergamot), bergamot, petitgrain (mandarin)

BLENDS WELL WITH: Bay laurel, cajeput, cardamom, carrot seed, cassia, chamomile (German, Roman), clary sage, coriander, geranium, grapefruit, lavender, lemon, lemon verbena, lime, melissa, orange, petitgrain, pine, rose, rosemary, sage, spikenard, tangerine, ylang ylang

RECOMMENDED DILUTION RANGE: 3%–50%; neat for some conditions

PRIMARY COMPOUNDS: [\[1490\]](#), [\[1491\]](#), [\[1492\]](#), [\[1493\]](#)

Linalool	26.6%–34.4%
Limonene	9.2%–27.5%
Beta-Pinene	3.5%–19.1%
(E)-Nerolidol	1.8%–17.5%
Alpha-Terpineol	4.6%–14.0%
Alpha-Terpinyl Acetate	0.2%–11.7%
Linalyl Acetate	3.3%–11.3%
(E,E)-Farnesol	0.0%–8.0%
Trans-Beta-Ocimene	0.0%–6.6%
Geranyl Acetate	2.6%–4.9%
Geraniol	0.4%–4.3%

OTHER COMPOUNDS: Alpha-pinene, sabinene, myrcene, cis-beta-ocimene, terpinen-4-ol, nerol, alpha-terpinolene, neryl acetate, beta-caryophyllene

REPORTED THERAPEUTIC PROPERTIES: Antibacterial, **analgesic (pain relief)**, anti-inflammatory, antiseptic, antispasmodic, aphrodisiac, expels excess gas, aids digestion, **cell regenerator**, antifungal, anti-infectious, balances blood pressure, **reduces the appearance of scars, blemishes, and spots**, anticonvulsive, helps hemorrhoids heal, deodorant, regenerative, sedating, **antidepressant**, **reduces anxiety**, combats shock, encourages a restful night's sleep, **stress management**, encourages creativity

CAUTIONS:

- May be mildly photosensitizing (very low risk). Avoid sun exposure to area of application for at least twelve hours after topical application. [\[1494\]](#)

SELECTED EVIDENCE:

- Neroli may help prevent and treat intestinal dysbiosis (a state of altered intestinal flora to one of harmful bacteria that contributes to a variety of chronic and degenerative diseases) by selectively destroying harmful bacteria while leaving probiotics intact. [\[1495\]](#)
- A sitz bath with or soap application of lavender, myrrh, neroli, rose, grapefruit, mandarin, orange, and Roman chamomile improves healing of the perineum following delivery and episiotomy. [\[1496\]](#)

- Applying a gauze pad with 4 ml of a neroli oil distillate (hydrosol) and changed every thirty minutes significantly reduced anxiety during the first stage of labor among pregnant women aged 18 to 35 years.[\[1497\]](#)
 - Inhalation of neroli oil from a pad for five minutes several times daily helps relieve menopausal symptoms, increase libido, reduce blood pressure, and balance the endocrine system according to clinical research.[\[1498\]](#)
 - Administering 20–40 mg/kg of neroli to animals prevented drug-induced convulsions by balancing the GABAergic system (a system of structures that release or bind gamma-aminobutyric acid and regulate anxiety, muscle tension, memory, and convulsive activity).[\[1499\]](#)
 - A clinical study concluded that both cortisol and systolic blood pressure declines after inhalation of a combination of lavender, ylang ylang, marjoram, and neroli oil in those with high blood pressure or pre-high blood pressure.[\[1500\]](#)
 - *In vitro* research discovered that neroli oil inhibited *H. pylori* growth (a bacterium strongly associated with stomach ulcers) in extraordinarily low concentrations.[\[1501\]](#)
 - Postpartum women who received a thirty-minute massage on the second postpartum day with 7 drops of lavender and 3 drops of neroli in 100 ml of carrier oil experienced significantly lower postpartum depression, reduced anxiety, and were more interactive with their infant.[\[1502\]](#)
 - Inhalation (ten deep breaths from aromatherapy stones with two drops of the blend) of lavender, Roman chamomile, and neroli reduced the anxiety and stress of patients undergoing coronary angioplasty (the insertion of a catheter to open blocked coronary arteries).[\[1503\]](#)
 - Neroli oil helps decrease inflammation by mildly inhibiting the 5-lipoxygenase (5-LOX) enzyme that is involved in the inflammation response *in vitro*.[\[1504\]](#)
 - *In vitro* research found that neroli oil is a potent antioxidant and that it moderately to strongly inhibits thirteen bacteria and eight fungal strains.[\[1505\]](#),[\[1506\]](#)
 - A twenty-minute foot massage with neroli oil one day after heart surgery significantly improved the mental and emotional state of the heart patients, and improved respiratory rate in people who had heart surgery.[\[1507\]](#)
 - Inhalation of neroli oil encourages a relaxed state in mice. The researchers also found that neroli oil compounds were detected in the blood of mice one hour after inhalation.[\[1508\]](#),[\[1509\]](#)
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NIAOULI

Melaleuca quinquenervia, *Melaleuca viridiflorol*

FAMILY: Myrtaceae

NOTE: Middle

AROMA INTENSITY: Medium

AROMA: Sharp, medicinal, slightly sweet, citrusy

COMMON EXTRACTION METHOD: Steam distilled from the leaves and twigs

POSSIBLE SUBSTITUTE OILS: Eucalyptus, Spanish sage, sage (1,8-cineole CT)

BLENDS WELL WITH: Bergamot, coriander, eucalyptus, fennel, juniper, lavandin, lavender, lemon, lime, melaleuca (tea tree), orange, peppermint, pine, spearmint, tangerine

RECOMMENDED DILUTION RANGE: 3%–50%; neat for some conditions

PRIMARY COMPOUNDS: [\[1510\]](#), [\[1511\]](#), [\[1512\]](#), [\[1513\]](#), [\[1514\]](#), [\[1515\]](#)

Melaleuca quinquenervia (1,8-Cineole CT) *

1,8-Cineole	19.1%–76.3%
Viridiflorol	0.0%–47.9%
Alpha-pinene	0.8%–25.0%
Limonene	0.5%–15.0%
Alpha-Terpineol	0.0%–15.0%
Alpha-Terpinyl Acetate	0.0%–11.4%
Para-Cymene	0.0%–10.0%
Beta-Pinene	0.5%–5.0%
(E,E)-Farnesol	0.0%–5.0%
Terpinen-4-ol	0.0%–3.0%

Melaleuca quinquenervia (1,8-Cineole & Viridiflorol CT)

1,8-Cineole	0.4%–75.0%
Viridiflorol	8.4%–66.0%
Beta-Caryophyllene	0.5%–28.0%
Alpha-Terpineol	0.0%–14.0%
Terpinolene	1.4%–8.3%
Alpha-pinene	1.3%–7.9%
(E)-Nerolidol	0.1%–2.3%
Gamma-Terpinene	0.1%–2.0%

Melaleuca quinquenervia ((E)-Nerolidol CT)

(E)-Nerolidol	56.0%–95.0%
Linalool	0.0%–30.0%
Beta-Caryophyllene	0.5%–8.7%
1,8-Cineole	0.1%–6.6%
Alpha-pinene	0.0%–4.5%

Melaleuca quinquenervia Viridiflorol CT

Viridiflorol	10.0%–67.4%
1,8-Cineole	0.1%–40.0%
Alpha-pinene	0.2%–27.7%
Beta-Caryophyllene	1.3%–24.6%
Alpha-Terpineol	1.5%–13.6%
Limonene	1.0%–10.0%
(E,E)-Farnesol	0.0%–10.0%
(E)-Nerolidol	0.1%–8.3%
Beta-Pinene	0.4%–5.0%

Melaleuca quinquenervia Viridiflorol/Para-Cymene/1,8-Cineole CT

Viridiflorol	4.0%–50.0%
1,8-Cineole	0.4%–47.0%
Para-Cymene	0.4%–40.0%
Gamma-Terpinene	0.0%–32.4%
Alpha-Terpineol	0.5%–24.5%
Terpinolene	0.1%–19.2%
Alpha-pinene	0.0%–17.0%
(E,E)-Farnesol	0.0%–10.8%
Limonene	1.0%–6.0%
Terpinen-4-ol	0.5%–5.0%
Alpha-Terpinyl Acetate	0.0%–5.0%
Beta-Pinene	0.1%–2.0%

*The 1,8-cineole CT is the most common and estimated to make up more than 90% of niaouli essential oils on the market.

OTHER COMPOUNDS: Alpha-thujene, benzaldehyde, beta-pinene, beta-myrcene, alpha-phellandrene, delta-3-carene, alpha-terpinene, terpinen-4-ol, iso-caryophyllene, allo-aromadendrene, ar-curcumene, beta-selinene, ledene, caryophyllene oxide, ledol, 10-epi-gamma-eudesmol, gamma-eudesmol, alpha-eudesmol, bulnesol

REPORTED THERAPEUTIC PROPERTIES: Analgesic (relieves pain), antispasmodic, **antibacterial**, antirheumatic, **antiseptic**, aids nutrient absorption, decongestant, **expectorant**, removes excess mucous, aids circulation, **relieves burns (including radiation burns)**, **helps boils and abscesses heal**, relieves insect bites and stings, **supports respiratory health**, reduces the appearance of scars and blemishes, antiparasitic, reduces fever, **wound healing**, stimulating, uplifting, reduces fear, encourages confidence, aids concentration

CAUTIONS:

- Avoid with children under age 3, particularly around the nose and mouth (*1,8-cineole* and *1,8-cineole & viridiflorol CT*). Use very cautiously in children under age 5 due to high 1,8-cineole content. 1,8-cineole may cause seizures, central nervous system problems, or respiratory distress in young children.[\[1516\]](#),[\[1517\]](#),[\[1518\]](#)
- Chemotypes high in 1,8-cineole may interfere with pentobarbital and other barbiturates (medications for anxiety and insomnia).[\[1519\]](#),[\[1520\]](#)
- Avoid with epilepsy and Parkinson's disease due to 1,8-cineole content (*1,8-cineole* and *1,8-cineole & viridiflorol CT*). May exacerbate or cause seizures or convulsions based on 1,8-cineole content.
- Caution is warranted orally due to the significant amounts of 1,8-cineole. Limit it to small doses internally (adults—maximum 10 drops daily). Toxicity has been reported when eucalyptus (also high in 1,8-cineole) was ingested in large doses, and as few as 4 to 5 drops may cause problems in very sensitive individuals.[\[1521\]](#),[\[1522\]](#),[\[1523\]](#),[\[1524\]](#),[\[1525\]](#),[\[1526\]](#)

SELECTED EVIDENCE:

- A nasal spray with lemon, ravensara, and niaouli oils (0.14 ml consisting of 0.014 ml lemon, 0.042 ml aloe vera juice, 0.0007 ml ravensara, 0.0007 g Propolis, and 0.00042 ml niaouli oil) decreased the symptoms of allergic and nonallergic rhinopathy (nasal congestion, drainage, and obstruction of the nasal passages) in a clinical trial.[\[1527\]](#)
 - Animal research suggests that niaouli oil enhances cellular immunity by upregulating T-cell (lymphocytes that respond to specific pathogens) and macrophage (a type of white blood cell that ingest foreign materials) activity.[\[1528\]](#)
 - Niaouli oil is considered a safe and natural way to control the mosquito population by killing mosquito larvae.[\[1529\]](#)
 - *In vitro* research suggests that niaouli oil may increase the skin penetration of estradiol, diclofenac sodium (a drug used to relieve pain, inflammation, and joint stiffness caused by arthritis), and other substances.[\[1530\]](#),[\[1531\]](#),[\[1532\]](#)
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Image Credit: Diana Taliun/Shutterstock

NUTMEG

Myristica fragrans

FAMILY: Myristicaceae

NOTE: Middle

AROMA INTENSITY: Medium

AROMA: Spicy, warm, nutty

COMMON EXTRACTION METHOD: Steam distilled from the seeds

POSSIBLE SUBSTITUTE OILS: Ravensara (Sabinene CT), ravintsara (Camphor CT)

BLENDS WELL WITH: Camphor, cassia, cinnamon, clary sage, copaiba, coriander, clove, eucalyptus, fennel, geranium, ginger, lavender, lime, orange, oregano, patchouli, pine, rosemary, turmeric, vetiver, ylang ylang

RECOMMENDED DILUTION RANGE: 3%–33%; 50% for some conditions

PRIMARY COMPOUNDS: [\[1533\]](#), [\[1534\]](#), [\[1535\]](#), [\[1536\]](#), [\[1537\]](#), [\[1538\]](#), [\[1539\]](#)

East Indian

Myristicin	0.3%–45.6%
Sabinene	6.3%–44.8%
Elemicin	0.6%–30.9%
Alpha-pinene	10.2%–26.5%
Safrole	0.0%–22.1%
Beta-Pinene	0.0%–17.7%
Terpinen-4-ol	1.0%–10.9%
Linalool	0.2%–7.4%
Limonene	2.0%–7.0%
Alpha-Phellandrene	0.0%–5.8%
Gamma-Terpinene	0.1%–5.2%
Alpha-Terpinene	0.1%–5.2%

West Indian

Sabinene	33.0%–57.0%
Alpha-pinene	9.4%–19.9%
Beta-Pinene	7.3%–18.8%
Terpinen-4-ol	5.8%–17.8%
Elemicin	0.4%–6.1%
Gamma-Terpinene	1.7%–4.7%
Limonene	2.9%–4.4%
Myristicin	0.2%–3.9%
Safrole	0.1%–1.4%

OTHER COMPOUNDS: Alpha-thujene, alpha-myrcene, terpinolene, linalool, alpha-terpineol, citronellol, eugenol, methyl eugenol

REPORTED THERAPEUTIC PROPERTIES: Analgesic (pain relief), antioxidant, antiseptic, antirheumatic, antispasmodic, **relieves menstrual cramps and painful menstruation, aids digestion**, expels excess gas, supports cardiovascular health, relieves constipation, eases cough, deodorant, increases redness and circulation of a localized area, supports brain health, aids detoxification, supports liver and adrenal function, stimulating, **reduces anxiety, stress management**, reduces feelings of being overwhelmed, combats worrisome and negative thoughts, aphrodisiac, reduces mental fatigue

CAUTIONS:

- Avoid nutmeg use in children under 6, and use cautiously with children through age 12. Children are more susceptible to nutmeg toxicity, which can produce dry mouth, flushing, irregular heart rhythm, tremors, agitation, and delirium.[\[1540\]](#),[\[1541\]](#),[\[1542\]](#)
- Avoid oral use and use cautiously topically during pregnancy and lactation due to myristicin and safrole content, particularly East Indian nutmeg, that has higher levels of myristicin and safrole. Animal research suggests that higher doses of safrole or myristicin (0.01 mL/kg every two days while nursing, and 0.001 to 10 mg while pregnant) taken orally during pregnancy and while nursing may cause liver toxicity in offspring born to the mother and increase the offspring's risk of liver cancer.[\[1543\]](#),[\[1544\]](#)
- Long-term oral use of small doses (1 to 6 drops) for more than twenty-one days without at least a seven-day break and single large doses (5 g or more of the whole herb) should be avoided due to the psychotropic activity of nutmeg, as well as its constituents methyl eugenol and safrole. Safrole and methyl eugenol can be toxic in large doses.[\[1545\]](#),[\[1546\]](#),[\[1547\]](#) Myristicin is believed to be at least partially responsible for the psychotropic (a substance capable of affecting the mind, emotions, and behavior) effects of nutmeg; although it is likely a combination of more than one component of nutmeg oil that produces this effect. Large doses of nutmeg with high myristicin content (5 g in a single dose), and long-term use of as few as 120 mg of the whole herb daily may produce a psychotropic (hallucinations, anxiety, fear, and delusions) effect in adults.[\[1548\]](#),[\[1549\]](#) In addition, scientists suspect nutmeg may be chemically modified once ingested to amphetamine-like compounds, though this has not been proven conclusively.[\[1550\]](#)
- May interact with psychotropic medications—medications prescribed for anxiety, depression, schizophrenia, mania, obsessive-compulsive disorder, ADHD, and bipolar disorder.[\[1551\]](#)

- May interact with monoamine oxidase inhibitors (MAOIs)—medications prescribed for the treatment of depression.[\[1552\]](#)
- May interfere with enzymes responsible for metabolizing medications (NSAIDs, proton-pump inhibitors, acetaminophen, antiepileptics, immune modulators, blood-sugar medications, blood-pressure medications, antidepressants, antipsychotics, diabetic medications, antihistamines, antibiotics, and anesthetics).[\[1553\]](#),[\[1554\]](#),[\[1555\]](#)

SELECTED EVIDENCE:

- Nutmeg oil significantly prevented DNA from bonding to cancer-causing chemicals (DNA adduct formation) *in vitro* and therefore may help prevent cancer.[\[1556\]](#) It also prevents the formation of blood vessels (angiogenesis) by cancerous tumors *in vitro*.[\[1557\]](#)
- A study concluded that nutmeg inhibited the growth and survival of the food-borne pathogens *Y. enterocolitica* (a bacterium that can cause right-sided abdominal pain, fever, and bloody diarrhea) and *L. monocytogenes* (a bacterium that causes a serious infection that causes muscle aches, sometimes preceded by gastrointestinal symptoms like diarrhea) on barbecued chicken.[\[1558\]](#)
- Nutmeg oil significantly prevented convulsions of grand mal and partial seizures in mice, but the researchers concluded it was not preferred for myoclonic and absence seizures.[\[1559\]](#)
- *In vitro* research suggests that nutmeg inhibits twenty-five microorganisms of significant importance.[\[1560\]](#)
- Animal research suggests that oral administration of myristicin provides extraordinary protection against liver damage.[\[1561\]](#)



ORANGE (Sweet, Wild)

Citrus sinensis

FAMILY: Rutaceae

NOTE: Top

AROMA INTENSITY: Medium

AROMA: Citrusy, sweet, fruity

COMMON EXTRACTION METHOD: Cold-pressed/expressed or hydrodistilled from the fruit peel (rind)

POSSIBLE SUBSTITUTE OILS: Lemon, grapefruit, tangerine, lime, bergamot

BLENDS WELL WITH: Bergamot, black pepper, camphor, cassia, cinnamon, citronella, clove, copaiba, coriander, frankincense, geranium, ginger, grapefruit, juniper, lavender, lemon, lemon verbena, lime, marjoram, melissa, myrrh, neroli, niaouli, nutmeg, vetiver, patchouli, tangerine, rose, sage, Spanish sage, sandalwood, spikenard, ylang ylang

RECOMMENDED DILUTION RANGE: 3%–50%; neat for some conditions

PRIMARY COMPOUNDS: [\[1562\]](#), [\[1563\]](#), [\[1564\]](#), [\[1565\]](#), [\[1566\]](#)

Cold-pressed/expressed

Limonene 85.4%–95.4%

Bornyl acetate 0.0%–4.2%

Beta-Myrcene 0.7%–2.4%

Alpha-pinene 0.5%–2.4%

Distilled

Limonene 81.5%–93.7%

Beta-Myrcene 0.9%–2.1%

Linalool 0.1%–1.4%

OTHER COMPOUNDS: *Cold-pressed/expressed*—Beta-pinene, octanal, decanal; *Distilled*—Camphene, alpha-pinene, beta-pinene, beta-myrcene, alpha-terpinene, cis-linalool oxide, terpinolene, linalool, camphor, borneol, alpha-terpineol, linalyl acetate, bornyl acetate, carvacrol, decanal

REPORTED THERAPEUTIC PROPERTIES: Anti-inflammatory, **antiseptic**, antispasmodic, antibacterial, expels excess gas, disinfectant, **aids digestion**, diuretic, expectorant, supports lymph drainage, antifungal, **anticancer**, stimulating, uplifting, **supports glutathione production**, **antidepressant**, aphrodisiac, helps reduce perfectionism, **reduces anxiety**, combats pessimism, **stress management**

CAUTIONS:

- None currently known.
- Sweet orange is considered nonphotosensitizing and devoid of photosensitizing compounds according to the available research. [\[1567\]](#), [\[1568\]](#)

SELECTED EVIDENCE:

- *In vitro* and animal research suggests that d-limonene from orange oil may prevent cancer by stimulating enzymes that metabolize and detoxify cancer-causing molecules and by triggering apoptosis. [\[1569\]](#)
- Orange oil prevents the spread and causes the death of colon cancer cells, and inhibits angiogenesis (the formation of new blood vessels, which allows a tumor to become malignant)

in vitro.[\[1570\]](#)

- Topical application of 10 drops, 3 times per day, of a 2% concentrated solution of orange oil reduced depressive symptoms better than Prozac (fluoxetine) according to a clinical trial that included 150 adults with major depressive disorder.[\[1571\]](#) Interestingly, the study authors observed that 20 drops of the same solution decreased its effectiveness, suggesting more is not always better when it comes to essential oils.
 - A topical mixture of sweet basil (3%) and orange (5%) essential oils and acetic acid was tested against acne in seven volunteers. The antiseptic and keratolytic activity of the mixture improved the acne in 75% of the volunteers.[\[1572\]](#)
 - Massaging ginger and orange oil to the knees of older adults six times over a three week period relieved moderate-to-severe knee pain and increased physical function in the short-term.[\[1573\]](#)
 - A sitz bath with or soap application of lavender, myrrh, neroli, rose, grapefruit, mandarin, orange, and Roman chamomile improves healing of the perineum following delivery and episiotomy.[\[1574\]](#)
 - *In vitro* research reported that orange oil provides a sun protection factor (SPF) of 3.975.[\[1575\]](#)
 - An *in vitro* dressing model concluded that orange oil prevents infections caused by *S. aureus* without harming skin cells (keratinocytes).[\[1576\]](#)
 - Inhaling orange oil in the waiting room prior to dental visits reduces anxiety in dental patients, including children.[\[1577\]](#),[\[1578\]](#),[\[1579\]](#)
 - Animal research suggests that inhalation of orange oil has a calming effect and reduces anxiety.[\[1580\]](#)
 - Inhalation of 2.5 to 10 drops of orange oil increased tranquility, reduced anxiety, and decreased tension in healthy males.[\[1581\]](#)
 - *In vitro* research suggests that the vapors of a combination of bergamot and orange oils inhibits the growth of drug-resistant and drug-sensitive strains of *E. faecalis* and *E. faecium*.[\[1582\]](#) Another study determined that bergamot and orange oil kill and inhibit the growth of these bacteria by affecting the cell membrane and cell homeostasis.[\[1583\]](#)
 - Orange oil inhibits several Salmonella species *in vitro*.[\[1584\]](#)
 - *In vitro* research concluded that orange oil inhibits *A. niger* (a common fungus that can infect humans and produce potent toxins, called mycotoxins and causes black mold in produce) *in vitro*.[\[1585\]](#)
 - Orange oil helps decrease inflammation by strongly inhibiting the 5-lipoxygenase (5-LOX) enzyme that is involved in the inflammation response according to *in vitro* research.[\[1586\]](#)
 - Animal research concluded that oral administration of orange oil protected rats against oxidative injury during an acute middle-ear infection.[\[1587\]](#)
 - *In vitro* research suggests that orange oil is a potent free-radical scavenger and inhibits aflatoxin B1 (a common mycotoxin found in foods that can damage DNA and cause cancer) and food contaminating molds.[\[1588\]](#)
 - Injection of 40 mg/kg of D-limonene prevents lipid peroxidation (free-radical deterioration of lipids, which can disrupt cellular communication, destroy cells, and damage proteins or DNA) and the depletion of reduced glutathione (GSH), vitamins C and E, and increases liver GSH in diabetic rats.[\[1589\]](#) Another study observed that d-limonene effectively restored GSH levels in mice.[\[1590\]](#)
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OREGANO

Origanum vulgare, *Origanum compactum*, *Origanum hirtum*

FAMILY: Lamiaceae (Labiatae)

NOTE: Middle

AROMA INTENSITY: Strong

AROMA: Herbaceous, warm, spicy, medicinal

COMMON EXTRACTION METHOD: Steam distilled from the leaves

POSSIBLE SUBSTITUTE OILS: Marjoram, thyme (carvacrol CT)

BLENDS WELL WITH: Bergamot, camphor, cedarwood, cinnamon, chamomile (German, Roman), clove, cypress, eucalyptus, frankincense, ginger, lavender, lemon, marjoram, melaleuca (tea tree), myrrh, orange, pine, rosemary, thyme

RECOMMENDED DILUTION RANGE: 1.5%–20%; 50% for some conditions

PRIMARY COMPOUNDS: [\[1591\]](#), [\[1592\]](#), [\[1593\]](#), [\[1594\]](#), [\[1595\]](#), [\[1596\]](#), [\[1597\]](#), [\[1598\]](#), [\[1599\]](#), [\[1600\]](#)

Origanum vulgare (Carvacrol CT)

Carvacrol	48.5%–83.4%
Para-Cymene	3.0%–12.6%
Gamma-Terpinene	0.0%–6.3%
Thymol	0.9%–5.9%
Caryophyllene Oxide	0.0%–4.9%
Borneol	0.9%–2.4%

O. vulgare (Terpinen-4-ol CT)

Terpinen-4-ol	41.2%–48.0%
Thymol	8.4%–22.0%
Linalool	2.1%–15.2%

Carvacrol	4.7%–9.4%
Alpha-Terpineol	5.0%–7.6%
Alpha-Terpinene	2.8%–5.9%
Gamma-Terpinene	0.0%–5.0%

*Origanum onites (Turkish)**

Carvacrol	65.5%–79.4%
Linalool	0.0%–12.5%*
Gamma-Terpinene	1.7%–5.2%
Para-Cymene	2.5%–4.9%
Borneol	0.5%–4.6%
Thymol	0.2%–2.8%

* Most *O. onites* samples have very little to any linalool based on the available research.

Origanum syriacum (Syrian) Carvacrol CT#

Carvacrol	47.1%–57.7%
Thymol	19.2%–21.0%
Para-Cymene	3.7%–5.2%
Gamma-Terpinene	3.4%–4.8%

O. syriacum (Syrian) Thymol CT#

Thymol	36.3%–65.6%
Carvacrol	3.4%–33.8%
Para-Cymene	7.0%–8.4%
Gamma-Terpinene	6.5%–8.0%

#*O. syriacum* composition varies widely based on the season harvested: summer/spring—thymol and carvacrol CTs; autumn/fall—thymol CT; winter—sabinene hydrate and thymol CTs.[\[1601\]](#)

OTHER COMPOUNDS: *O. vulgare (Carvacrol CT)*—Alpha-thujene, alpha-pinene, beta-myrcene, alpha-terpinene, trans-alpha-ocimene, sabinene hydrate, terpinen-4-ol, carvacrol acetate, beta-caryophyllene, beta-bisabolene, delta-cadinene, caryophyllene oxide, alpha-cadinol; *O. vulgare (Terpinen-4-ol CT)*—Alpha-phellandrene, para-cymene, limonene, terpinolene, methyl thymol ester, methyl carvacrol ester, geraniol/neral, beta-caryophyllene, spathulenol, 1,8-cineole; *O. onites (Turkish)*—Alpha-thujene, alpha-pinene, beta-myrcene, alpha-terpinene, trans sabinene hydrate, thymoquinone, beta-caryophyllene, beta-bisabolene, 4-terpineol, beta-caryophyllene, limonene, camphor; *Origanum syriacum*—Alpha-thujene, alpha-pinene, myrcene, alpha-terpinene, 1,8-cineole, trans-sabinene-hydrate, carvone, beta-caryophyllene, aromadendrene, cis-sabinene hydrate

REPORTED THERAPEUTIC PROPERTIES: Analgesic (pain relief), anti-inflammatory, **antibacterial**, **antifungal**, antioxidant, **antimicrobial** (particularly systemic infection), **antiviral**, anti-infectious, anticancer, antispasmodic, antiallergenic, diuretic, **immune stimulant**, expels excess gas, expectorant, bronchodilator, **helps relieve menstrual discomfort**, **removes warts**, warming, antidepressant, reduces insecurity, encourages a general feeling of well-being, promotes a sense of security

CAUTIONS:

- Avoid during pregnancy and lactation. Oregano may negatively affect embryonic development and encourage fetal cell death according to animal research.[\[1602\]](#)
- May irritate mucous membranes (eyes, mouth, nasal passages, vagina, rectum).
- May interact with diabetic medications and cause low blood-sugar levels.[\[1603\]](#)
- May interact with aspirin, blood-pressure, antiplatelet, and anticoagulant medications, and increase the risk of bleeding among people with bleeding disorders.[\[1604\]](#)[\[1605\]](#)
- May interact with antibiotics and possibly enhance their effects.[\[1606\]](#)[\[1607\]](#)

SELECTED EVIDENCE:

- *O. onites* oil significantly inhibited cell viability, angiogenesis (the formation of new blood vessels, which allows a tumor to become malignant), and triggered apoptosis (destruction) of the connective tissue cells from rat embryos *in vitro*.[\[1608\]](#)
- *In vitro* research concluded that carvacrol from *O. onites* may be useful in cancer therapy after they found that it inhibited the growth of mouse myoblast cells (an embryonic cell that becomes a muscle cell or fiber) after activation of a human oncogene (activated oncogenes have the potential to cause cancer by allowing the cell to proliferate instead of self-destruct when appropriate).[\[1609\]](#)
- Carvacrol effectively inhibits glioblastomas *in vitro*, which are cancerous tumors that arise from astrocytes (brain cells that make up the supportive tissue of the brain).[\[1610\]](#)
- Oregano with high carvacrol content may cause bronchodilation according to animal research.[\[1611\]](#)
- A 4-terpineol-rich oregano oil kills colon adenocarcinoma cells *in vitro*.[\[1612\]](#)
- Oregano oil increased antioxidant enzyme activity (up to three times) and decreased lung carcinoma tumor size in mice after three months of administration.[\[1613\]](#)
- *O. vulgare* inactivates the yellow fever virus *in vitro*, which is a disease transmitted by mosquitos characterized by fever, muscle pain, backache, headache, loss of appetite, and nausea or vomiting.[\[1614\]](#)
- Administration of 200 mg (about seven drops) of an emulsified (sustained release form) of *O. vulgare* oil three times daily for six weeks completely eradicated parasites (*Entamoeba hartmanni*, *Endolimax nana*, and *Blastocystis hominis*) in the majority of people included in the study (77%).[\[1615\]](#)
- Animal research concluded that administration of 0.1 to 1 mg/kg daily of *O. onites* in the rectum or injected into the peritoneal cavity (the fluid-filled gap between the abdominal wall and abdominal organs) protects the colon from injury in rats.[\[1616\]](#) The study observed a significant reduction in ulcers, mucus cell depletion, inflammation, abscesses characteristic of chronic bowel disorders, and mucosal atrophy.
- *In vitro* research concluded that oregano and carvacrol effectively inhibit the murine norovirus (a norovirus that affects mice but is used in research to study the effects of drugs and other remedies against human norovirus).[\[1617\]](#)[\[1618\]](#)
- Oregano oil strongly inhibits *C. albicans*, *S. aureus*, *E. coli*, *L. monocytogenes*, and *S. mutans* *in vitro*.[\[1619\]](#)[\[1620\]](#)[\[1621\]](#)[\[1622\]](#) Remarkably, a study found that oregano oil inhibits 111 gram-positive bacterium in twenty-three species related to three genre of bacterium.[\[1623\]](#) One study

concluded that oregano's strong antimicrobial activity against *C. albicans* make it a possible alternative treatment for candidiasis.[\[1624\]](#)

- *In vitro* research suggests that oregano oil inhibits *T. cruzi*.[\[1625\]](#) *T. cruzi* causes the potentially life-threatening illness Chagas disease, also known as American trypanosomiasis.
 - According to *in vitro* research oregano oil prevents the formation of enterotoxins (toxins produced by pathogens that target the intestines) by *S. aureus*.[\[1626\]](#)
 - *In vitro* research concluded that oregano essential oil strongly inhibited *P. insidiosum* (a pathogenic oomycete that infects mammals and causes gangrenous ulcers on the skin and may restrict blood flow in the surrounding arteries).[\[1627\]](#)
 - Oregano inhibited the growth and survival of the food-associated pathogens *Y. enterocolitica* (a bacterium that can cause right-sided abdominal pain, fever, and bloody diarrhea) and *L. monocytogenes* (a bacterium that causes a serious infection that causes muscle aches, sometimes preceded by gastrointestinal symptoms like diarrhea) on barbecued chicken.[\[1628\]](#)
 - Oregano oil (Terpinen-4-ol CT) controls the production of aflatoxin B1 (a common mycotoxin found in foods that can damage DNA and cause cancer) by *A. flavus* in corn, grapes, and soybeans *in vitro*.[\[1629\]](#),[\[1630\]](#)
 - *In vitro* research concluded that oregano oil possesses strong antioxidant properties.[\[1631\]](#)
 - Oregano oil prevents oxidation of LDL cholesterol *in vitro*.[\[1632\]](#) Higher oxidized LDL levels are associated with a significantly increased risk of heart disease.[\[1633\]](#)
 - Oregano oil inhibited Listeria strains (*L. monocytogenes* and *L. innocua*), whereas its hot water extract was ineffective *in vitro*.[\[1634\]](#)
 - Application of oregano and lemongrass oil to ground beef controls the growth of *S. enteritidis* (a very common foodborne pathogen that may cause stomach flu, fever with rash, serious bacterial infections of the blood, and systemic bacterial infection) during refrigerated storage.[\[1635\]](#) Additional studies reported that oregano oil is a promising natural food preservative that could possibly replace chemical preservatives currently used by the food industry.[\[1636\]](#),[\[1637\]](#),[\[1638\]](#),[\[1639\]](#)
 - *In vitro* research concluded that oregano oil inhibits MRSA, as do its components carvacrol and thymol.[\[1640\]](#)
 - A foot bath (107°F water) with salts and either oregano, thyme, cinnamon bark, lemongrass, clove, palmarosa, peppermint, lavender, or geranium significantly reduced fungi associated with athlete's foot *in vitro*.[\[1641\]](#)
 - Animal research found that oral administration of (12 mg per 100 dl) of *O. onites* for twelve weeks protected against toxicity and diabetic-related tissue injury caused by streptozotocin (a chemical that is highly toxic to insulin-producing beta-cells and is used to induce experimental diabetes in animals) in rats.[\[1642\]](#)
 - *O. syriacum* inhibits 14 bacteria (*C. xerosis*, *B. brevis*, *B. megaterium*, *B. subtilis*, *M. smegmatis*, *P. aeruginosa*, *S. aureus*, *K. pneumoniae*, *K. oxytoca*, *E. faecalis*, *M. luteus*, *E. coli*, and *Y. enterocolitica*), and two fungi (*S. cerevisiae* and *S. sclerotiorum*) *in vitro*.[\[1643\]](#),[\[1644\]](#)
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PALMAROSA

Cymbopogon martinii, *Cymbopogon martini*

FAMILY: Poaceae (Gramineae)

NOTE: Middle

AROMA INTENSITY: Medium

AROMA: Floral, sweet, slightly rose-like

COMMON EXTRACTION METHOD: Steam distilled from the leaves

POSSIBLE SUBSTITUTE OILS: Thyme (Geraniol CT), citronella, lemongrass, rose, geranium

BLENDS WELL WITH: Bergamot, cedarwood, geranium, lime, rosemary, sandalwood, spikenard, ylang ylang

RECOMMENDED DILUTION RANGE: 3%–50%; neat for some conditions

PRIMARY COMPOUNDS:[\[1645\]](#),[\[1646\]](#),[\[1647\]](#),[\[1648\]](#),[\[1649\]](#)

Geraniol	63.5%–83.8%
Geranyl Acetate	2.3%–14.8%
(E)-Beta-Ocimene	1.2%–4.3%
(E,Z)-Farnesol	1.6%–3.4%
Linalool	0.8%–2.6%
Geranial	0.0%–2.1%

OTHER COMPOUNDS: Limonene, beta-caryophyllene, geranyl hexanoate

REPORTED THERAPEUTIC PROPERTIES: Antiseptic, antibacterial, antiviral, aids digestion, reduces fever, **moisturizes and tones skin**, aids circulation, **promotes cellular growth and regeneration**, relieves skin conditions, wound healing (especially cracks), relaxes muscles, helps reduce the appearance of blemishes, uplifting, reduces anxiety, antidepressant, stress management, supports one through change, calms the mind, combats jealous and possessive feelings

CAUTIONS:

- May moderately interfere with enzymes responsible for metabolizing medications (NSAIDs, proton-pump inhibitors, acetaminophen, antiepileptics, immune modulators, blood-sugar medications, blood-pressure medications, antidepressants, antipsychotics, diabetic medications, antihistamines, antibiotics, and anesthetics).[\[1650\]](#)
- Dilution recommended for topical application. Geraniol is metabolized and autoxidized into metabolites like geranial and neral, and may cause sensitization and irritation when applied topically.[\[1651\]](#)

SELECTED EVIDENCE:

- Inhalation of palmarosa increases glutathione peroxidase levels (enzymes responsible for protecting the body from damage caused by hydroperoxide free radicals) and catalase (an enzyme responsible for breaking down hydrogen peroxide produced by cells into oxygen and water) in rats, which reduces oxidative stress.[\[1652\]](#) This activity protects the liver against toxicity. Interestingly, the same researchers found that if geraniol is isolated from palmarosa it increases creatinine and alanine aminotransferase levels in the blood, which suggests that geraniol may cause liver toxicity if not buffered by the other compounds in palmarosa.
- *In vitro* research suggests that palmarosa reduces inflammation by modulating the immune response and increases the production of interleukin-10 (an anti-inflammatory cytokine).[\[1653\]](#)
- Palmarosa oil relieves pain by activating the TRPV1 receptor (a molecular sensor that detects painful sensations, and when activated triggers pathways that reduce pain caused by heat and inflammation) *in vitro*.[\[1654\]](#)
- Palmarosa reduces the production of proinflammatory cytokines (TNF-alpha, IL-1Beta, and IL-8), and is a potent antioxidant according to *in vitro* research.[\[1655\]](#)[\[1656\]](#)
- *In vitro* research suggests that palmarosa inhibits elastase activity (an enzyme involved in the breakdown of elastin and a causal factor in lung connective tissue diseases, disruption of the body's ability to kill pathogens, and delayed wound healing).[\[1657\]](#) The researchers concluded that topical administration may be beneficial for bullous pemphigoid (a skin condition that causes the formation of large blisters) and pulmonary emphysema (a chronic lung condition characterized by enlargement of the air sacs in the lungs).
- Animal research concluded that the oral administration of palmarosa (50 to 100 mg/kg) significantly prevented damage to neurons caused by a loss of and subsequent return of blood supply (ischemia/reperfusion) to the brain.[\[1658\]](#) Palmarosa decreased lipid peroxidation and returned superoxide dismutase, catalase, total thiols (organic compounds that contain a sulfur and hydrogen atom that play a significant role in the body's defense mechanisms against reactive oxygen species), and reduced glutathione levels to normal.
- Animal and *in vitro* research suggests that the topical application of palmarosa may be an effective alternative treatment to synthetic drugs for the topical treatment of dermatophytes (fungi that require keratin for growth and infect the skin, hair, and nails).[\[1659\]](#)
- Geraniol, the main compound in palmarosa, may reverse diabetic neuropathy by balancing biochemicals involved in neuropathy (like dopamine levels).[\[1660\]](#)
- A foot bath (107°F water) with salts and either oregano, thyme, cinnamon bark, lemongrass, clove, palmarosa, peppermint, lavender, or geranium significantly reduced fungi associated with

athlete's foot *in vitro*.[\[1661\]](#)

- Palmarosa oil demonstrated significant activity against *E. coli in vitro*.[\[1662\]](#)
 - *In vitro* research suggest that palmarosa oil inhibits *E.coli*, *S. aureus*, *P. acnes*, *C. albicans*, *P. putida*, and *P. ovale*.[\[1663\]](#),[\[1664\]](#),[\[1665\]](#),[\[1666\]](#) One *in vitro* study concluded that palmarosa was more effective than amphotericin B (a drug used to treat fungal infections) at inhibiting *C. albicans*.[\[1667\]](#)
 - Palmarosa prevents the spread, growth of, and production of mycotoxins by *Aspergillus* spores better than synthetic preservatives created for the same purpose *in vitro*.[\[1668\]](#)
 - The main compound in palmarosa, geraniol, blocks both calcium and potassium channels of the heart, which may make it useful for arrhythmia.[\[1669\]](#)
-



PALO SANTO

Bursera graveolens

FAMILY: Burseraceae

NOTE: Middle

AROMA INTENSITY: Strong

AROMA: Woody, sharp, citrusy, slightly sweet

COMMON EXTRACTION METHOD: Steam distilled from the wood or leaves

POSSIBLE SUBSTITUTE OILS: Frankincense

BLENDS WELL WITH: Balsam fir, black pepper, blue spruce, clary sage, copaiba, cypress, frankincense, lavender, melissa, myrrh, rose, sandalwood, spruce (black), vetiver, silver fir, white fir

RECOMMENDED DILUTION RANGE: 5%–Neat

PRIMARY COMPOUNDS:[\[1670\]](#),[\[1671\]](#),[\[1672\]](#),[\[1673\]](#)

Leaves, Aerial Parts

Limonene 26.5%–30.7%

(E)-Beta-Ocimene	13.0%–20.8%
Beta-Elemene	11.3%–14.1%
Menthofuran	0.0%–5.1%

Wood

Germacrene A	0.0%–3.9%
Limonene	60.7%–68.7%
Menthofuran	0.0%–13.4%
Alpha-Terpineol	5.8%–10.9%
Gamma-Terpineol	0.0%–8.7%
Germacrene D	0.0%–2.1%

OTHER COMPOUNDS: Beta-cymene, para-cymene, alpha-farnesene, trans-pinocarveol, carvone, pulegone, gamma-murolene, piperitol, trans-carveol

REPORTED THERAPEUTIC PROPERTIES: Analgesic, **anti-inflammatory**, antispasmodic, antibacterial, antiseptic, **anticancer**, antioxidant, immune stimulant, eases cough, relieves menstrual pain, antiallergenic, **decongestant**, expectorant, supports respiratory health, encourages calm, **relieves anxiety**, **stress management**, relaxing, promotes focus, enhances creativity, grounding, enhances meditation

CAUTIONS:

- Oral caution for long-term use (palo santo wood). Large doses of menthofuran (greater than 5 ml) and pulegone can be toxic to the liver.[\[1674\]](#),[\[1675\]](#),[\[1676\]](#),[\[1677\]](#) However, limonene is considered nontoxic (even at high doses—a single acute dose of 20 g) and no animal or human toxicity studies for palo santo oil have been reported as of this writing.[\[1678\]](#) Based on this information it is recommended that palo santo be used cautiously orally until safety studies are completed. Limit oral consumption to no more than 15 drops of palo santo per day for up to twenty-one days with a seven-day break afterwards, or no more than 5 drops daily for long-term use.

SELECTED EVIDENCE:

- Animal and *in vitro* research concluded that palo santo oil prevents the growth of breast tumor cells.[\[1679\]](#),[\[1680\]](#)
-



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PATCHOULI

Pogostemon cablin, *Pogostemon patchouly*

FAMILY: Lamiaceae (Labiatae)

NOTE: Medium

AROMA INTENSITY: Medium

AROMA: Rich, herbaceous, musky, earthy, spicy

COMMON EXTRACTION METHOD: Steam distilled from the leaves; may be distilled from the stems also (usually high in pogostone)

POSSIBLE SUBSTITUTE OILS: Spikenard, vetiver

BLENDS WELL WITH: Bay laurel, bergamot, black pepper, cajeput, camphor, cardamom, carrot seed, cedarwood, chamomile (German, Roman), cinnamon, clary sage, clove, eucalyptus, frankincense, geranium, ginger, lavender, lemongrass, myrrh, neroli, pine, orange, rose, sandalwood, Spanish sage, spikenard, vetiver

RECOMMENDED DILUTION RANGE: 5%–Neat

PRIMARY COMPOUNDS: [\[1681\]](#), [\[1682\]](#), [\[1683\]](#), [\[1684\]](#), [\[1685\]](#), [\[1686\]](#), [\[1687\]](#), [\[1688\]](#)

Brazilian

Patchoulol	36.6%–70.7%
Alpha-Bulnesene (Delta-Guaiene)	6.9%–55.1%
Alpha-Guaiene	2.9%–12.0%
Alpha-Patchoulene	5.2%–6.7%

Chinese

Patchoulol	22.9%–78.2%
Alpha-Guaiene	1.7%–21.5%
Pogostone	6.0%–32.7%

Alpha-Bulnesene (Delta-Guaiene)	0.9%–11.8%
Seychellene	0.0%–9.6%
Alpha-Patchoulene	0.0%–9.1%
Caryophyllene	0.5%–6.8%
Beta-Patchoulene	0.0%–5.8%

Indonesian, Malaysian, Vietnamese

Patchoulol	37.8%–68.0%
Alpha-Bulnesene (Delta-Guaiene)	6.8%–14.7%
Alpha-Guaiene	4.3%–13.4%
Alpha-Patchoulene	1.8%–8.0%
Seychellene	3.7%–7.5%
Pogostol	3.7%–5.5%

OTHER COMPOUNDS: 1-octen-3-ol, beta-patchoulene, trans-caryophyllene, gamma-patchoulene, dihydro-aromadendrene, trans-beta-guaiene, beta-copaen-4-alpha-ol, alpha-patchoulene, seychellene, pogostol

REPORTED THERAPEUTIC PROPERTIES: Antibacterial, anti-inflammatory, **antiseptic**, antiviral, **antifungal**, expels excess gas, decongestant, eases nausea and vomiting, reduces constipation, nervine (calms and soothes the nerves), **circulatory aid**, aids digestion, reduces fever, protects skin from UV-radiation damage, reduces the appearance of blemishes, **nourishes and moisturizes the skin**, regenerative, **soothes skin conditions**, wound healing, stimulating, **antidepressant**, aphrodisiac, promotes clarity of thought, **stress management**, balances overactive minds

CAUTIONS:

- May interact with aspirin, blood-pressure, antiplatelet, and anticoagulant medications, and increase the risk of bleeding among people with bleeding disorders based on alpha-bulnesene content.[\[1689\]](#)

SELECTED EVIDENCE:

- *In vitro* research suggests that patchouli oil exerts anticancer activity by decreasing cell growth and triggering apoptosis in human colorectal cancer cells.[\[1690\]](#)
- Patchouli oil prevented the spread of cervical cancer cells *in vitro*.[\[1691\]](#)
- Patchouli oil helps decrease inflammation by moderately inhibiting the 5-lipoxygenase (5-LOX) enzyme that is involved in the inflammation response according to *in vitro* research.[\[1692\]](#)
- Animal research concluded that patchouli oil helps maintain the structural integrity of the skin and prevents damage to the skin caused by UV exposure by enhancing the activity of glutathione peroxidase, superoxide dismutase, and catalase.[\[1693\]](#)
- Inhalation of patchouli oil is sedating, particularly if combined with other oils according to animal research.[\[1694\]](#)
- Animal research suggests that pogostone (found in patchouli oil) inhibits *C. albicans* and is a promising candidate for the treatment of Candida infections, especially vulvovaginal

candidiasis. [\[1695\]](#), [\[1696\]](#)

- Oral administration of patchouli oil has a significant immunomodulatory effect in mice and enhances leukocyte and macrophage (key immune cells) activity. [\[1697\]](#), [\[1698\]](#)
 - *In vitro* research concluded that patchouli oil inhibits sixteen strains of common skin bacteria that are associated with foot and armpit odor. [\[1699\]](#)
 - Patchouli oil helps repel and kill, moths, and dust mites. [\[1700\]](#), [\[1701\]](#), [\[1702\]](#)
-



PEPPERMINT

Mentha piperita

FAMILY: Lamiaceae (Labiatae)

NOTE: Top

AROMA INTENSITY: Strong

AROMA: Minty, cool, invigorating, sharp

COMMON EXTRACTION METHOD: Steam distilled from the leaves

POSSIBLE SUBSTITUTE OILS: Spearmint, rosemary

BLENDS WELL WITH: Basil, bergamot, cajeput, cypress, eucalyptus, ginger, grapefruit, lavender, lemon, lemongrass, lime, marjoram, melaleuca (tea tree), niaouli, petitgrain, pine, ravintsara, rosemary, sage, spearmint, tangerine, thyme

RECOMMENDED DILUTION RANGE: 3%–33%; neat for some conditions

PRIMARY COMPOUNDS: [\[1703\]](#), [\[1704\]](#), [\[1705\]](#), [\[1706\]](#), [\[1707\]](#)

Menthol	25.2%–76.7%
Menthone	2.5%–30.6%
Menthol Acetate (Menthyl Acetate)	0.4%–17.4%
Menthofuran	0.1%–11.2%
Limonene	0.2%–10.8%

Beta-Phellandrene	0.1%–9.2%
1,8-Cineole	4.1%–6.7%
IsoMenthone	0.0%–5.3%
Pulegone	0.3%–4.4%

OTHER COMPOUNDS: 1,8-cineole, cis-sabinene hydrate, neomenthone, isomenthone, neomenthyl acetate, isomenthyl acetate, beta-caryophyllene, germacrene D

REPORTED THERAPEUTIC PROPERTIES: Analgesic (pain relief), antibacterial, anti-inflammatory, antifungal, immune supportive, **relieves headache**, bronchodilator, antimicrobial, antiseptic, antispasmodic, **antineuralgic**, astringent, expels excess gas, **aids digestion**, anticancer, expectorant, decongestant, **reduces fever**, nervine (calms and soothes the nerves), **eases nausea and vomiting**, promotes oral cleanliness, stimulates liver and gallbladder function and encourages the release of bile, **stimulates pancreas function**, stimulating, anesthetic, aids concentration, **promotes alertness**, invigorating, **combats fatigue**, encourages self-confidence, enhances creativity, calms anger, encourages a fresh perspective

CAUTIONS:

- Avoid in children under age 3 and use cautiously in children under 6, particularly near the face or nose. Essential oils high in menthol and 1,8-cineole content may cause respiratory distress or breathing problems in very young children.[\[1708\]](#),[\[1709\]](#),[\[1710\]](#),[\[1711\]](#)
- The menthol content in peppermint may negatively impact red blood cells and increase the risk of jaundice in children with glucose-6-phosphate dehydrogenase deficiency (G6PD).[\[1712\]](#),[\[1713\]](#)
- Avoid use in those with ventricular fibrillation (a severely abnormal heart rhythm). Oral use of peppermint may destabilize the heart rhythm based on menthol content.[\[1714\]](#)
- Avoid use in those with iron-deficiency and iron-deficiency anemia. Animal research suggests that peppermint may decrease iron absorption and therefore aggravate iron-deficiency symptoms and anemia.[\[1715\]](#)
- May interact with cyclosporine (a medication used to suppress the immune system and avoid transplant rejection) and possibly other immunosuppressants. Very large doses of peppermint may enhance the bioavailability of cyclosporine, increase blood levels of the drug, and intensify its immune-suppressing activity.[\[1716\]](#),[\[1717\]](#)
- Extremely large doses of peppermint (greater than 5 ml daily) may interact with codeine and significantly reduce its pain relieving effect based on animal research.[\[1718\]](#)
- Extremely large doses of peppermint (greater than 5 ml daily) may interact with pentobarbital (a medication for anxiety, insomnia, and epilepsy) and midazolam (a drug used before surgery to encourage relaxation and sleepiness) and prolong the sleeping effect based on animal research.[\[1719\]](#)
- May interact with fluorouracil (a topical medication used from skin cancer and keratosis), and enhance its penetration through the skin.[\[1720\]](#)
- May possibly interact with the antibiotic oxytetracycline and enhance its antimicrobial activity.[\[1721\]](#)
- May weakly interfere with enzymes responsible for metabolizing medications (NSAIDs, proton-pump inhibitors, acetaminophen, antiepileptics, immune modulators, blood-sugar medications,

blood-pressure medications, antidepressants, antipsychotics, diabetic medications, antihistamines, antibiotics, and anesthetics).[\[1722\]](#),[\[1723\]](#),[\[1724\]](#)

- May irritate mucous membranes (eyes, mouth, nasal passages, vagina, rectum).
- Use with caution with gastroesophageal reflux disease (low risk). Peppermint relaxes smooth muscles and may relax the lower esophageal sphincter muscle. Relaxation of this sphincter may increase heartburn and acid reflux symptoms. This appears to be isolated to sensitive individuals.[\[1725\]](#),[\[1726\]](#)
- Some have suggested that peppermint oil should be limited orally because very large doses of menthofuran, pulegone, menthone, and menthol can be toxic to the liver.[\[1727\]](#),[\[1728\]](#),[\[1729\]](#),[\[1730\]](#),[\[1731\]](#) But it takes a very extreme amount of peppermint oil ingestion to cause fatalities in animals, and the equivalent of about 10 to 20 drops daily has been used in studies for irritable bowel syndrome, and up to 8 ml per liter of water has been administered through the rectum during a colonoscopy.[\[1732\]](#),[\[1733\]](#),[\[1734\]](#),[\[1735\]](#) Based on this information it can be concluded that reasonable doses of peppermint pose little risk of actual toxicity.

SELECTED EVIDENCE:

- *In vitro* research suggests that peppermint oil is significantly active against lung carcinoma, leukemia, and stomach cancer cells.[\[1736\]](#) The same research concluded that peppermint is a mild antioxidant, and inhibits proinflammatory production of nitric oxide and prostaglandin E2.
- Peppermint potently inhibits *E. coli*, which is suspected of altering intestinal flora balance.[\[1737\]](#) This disrupted flora balance is suspected as a causal factor in triggering irritable bowel syndrome. Other research concluded that peppermint oil inhibits *E. coli*, *S. aureus*, *P. aeruginosa*, *S. faecalis*, and *K. pneumoniae*.[\[1738\]](#)
- Multiple clinical studies suggest that the oral administration of peppermint oil (0.1 to 0.2 mL, three times daily) is associated with relief of irritable bowel symptoms and associated pain, largely through preventing gastrointestinal spasms.[\[1739\]](#),[\[1740\]](#),[\[1741\]](#),[\[1742\]](#),[\[1743\]](#),[\[1744\]](#)
- Inhalation of peppermint oil may reduce the frequency and severity of nausea and vomiting, and the need for drugs used to treat nausea and vomiting.[\[1745\]](#),[\[1746\]](#) Another study concluded that inhalation of ginger, spearmint, peppermint, and cardamom (three deep inhalations) from a gauze pad following surgery reduced nausea and requirements for medications to reduce nausea and vomiting.[\[1747\]](#)
- Animal research suggests that inhalation of menthol causes bronchodilation.[\[1748\]](#)
- Oral administration of 0.05 ml of peppermint oil in 500 ml of water daily for ten days resulted in improved exercise performance, blood pressure, and respiratory performance in young males.[\[1749\]](#)
- Peppermint significantly kills HSV-1 and HSV-2, prevents healthy cells from being infected with both viruses, and is active against acyclovir (commonly known as Zovirax, it is an antiviral drug used to treat herpes virus infections) resistant HSV-1.[\[1750\]](#)
- Animal and *in vitro* research suggests that peppermint oil kills the parasitic worm Anisakis that infects the stomach and intestines and causes abdominal pain, nausea, intestinal obstruction, and intestinal tract damage.[\[1751\]](#) Peppermint oil effectively prevented gastrointestinal lesions caused by the parasite, whereas 46.7% of animals treated with albendazole (a drug used to treat worm infections, including Anisakis) experienced gastrointestinal lesions.
- A review recommended the topical application of diluted tea tree, peppermint, or melissa oil

three to four times daily for recurrent herpetic infections (canker sores, cold sores, and genital herpes).[\[1752\]](#)

- Inhalation of a combination of peppermint, basil, and helichrysum oils reduced mental exhaustion and moderate burnout in a small pilot study.[\[1753\]](#)
- Topical application of a combination of lavender, geranium, tea tree, and peppermint oils improved the oral health of hospice patients with terminal cancer.[\[1754\]](#)
- Inhalation of peppermint oil enhances attention, speed, and accuracy while performing clerical tasks, which increased task performance.[\[1755\]](#)
- Topical application of a 1.5% solution containing lavender, marjoram, eucalyptus, rosemary, and peppermint (2:1:2:1:1 ratio), in a carrier oil consisting of 45% apricot, 45% almond, and 10% jojoba carrier oils significantly decreased pain and depression in people with arthritis.[\[1756\]](#)
- An abdominal massage with lemon, rosemary, and peppermint oil relieved constipation in the elderly.[\[1757\]](#) Interestingly, the effect of the massage lasted for two weeks after treatment.
- *In vitro* research suggest that peppermint oil inhibits *C. albicans*.[\[1758\]](#)[\[1759\]](#)
- Peppermint oil completely inhibits the yeasts *T. asahii* and *T. cutaneum* that are known to cause potentially life-threatening infections (urinary tract, skin, and bloodstream) in those with a compromised immune system.[\[1760\]](#)
- *In vitro* research concluded that peppermint essential oil inhibited *P. insidiosum* (a pathogenic oomycete that infects mammals and causes gangrenous ulcers on the skin and may restrict blood flow in the surrounding arteries).[\[1761\]](#)
- *In vitro* research suggests that peppermint inhibits elastase activity (an enzyme involved in the breakdown of elastin and a causal factor in lung connective tissue diseases, disruption of the body's ability to kill pathogens, and delayed wound healing).[\[1762\]](#) The researchers concluded that topical administration may be beneficial for bullous pemphigoid (a skin condition that causes the formation of large blisters) and pulmonary emphysema (a chronic lung condition characterized by enlargement of the air sacs in the lungs).
- Injection of peppermint oil into animals prior to pentylenetetrazol (a drug used to experimentally study seizures in animals) protected mice from seizures and increased survival rate to 100%.[\[1763\]](#)
- The severity of pregnancy-associated nausea was mildly reduced among women after they inhaled 4 drops of peppermint oil from a bowl of water placed next to the bed while sleeping.
- Oral administration of 2 drops each of peppermint and spearmint oils (the rest of the capsule was filled with sugar) in addition to traditional drugs (granisetron, dexamethasone, or metoclopramide) significantly reduced the number and severity of nausea and vomiting episodes in chemotherapy patients within the first twenty-four hours of taking the oils.[\[1764\]](#)
- Peppermint has been used to reduce itching caused by allergies, drugs, kidney, or liver disease, and other health conditions.[\[1765\]](#)
- *In vitro* and animal research suggests that peppermint oil is a good free-radical scavenger, significantly decreases uric acid levels in the blood (higher uric acid levels are associated with increased gout risk), and significantly killed cervical cancer cells.[\[1766\]](#)[\[1767\]](#)[\[1768\]](#) The same research found that peppermint extract reduced lung tumors.
- Animal research suggests that peppermint oil relaxes tracheal spasms caused by carbachol (a drug used to induce spasms in animals).[\[1769\]](#)
- Researchers evaluated the effectiveness of a spray (administered as four sprays, five times daily) containing 30% *Origanum syriacum* (Israeli oregano), 20% peppermint, rosemary, and

Eucalyptus globulus, and 10% *E. citriodora* in people with upper respiratory tract infections (URTI). The researchers concluded that people who used the spray experienced significant reductions in their most debilitating URTI symptoms within twenty minutes of application.[\[1770\]](#) Another study concluded that peppermint, thyme, cinnamon, and lemongrass oils inhibited the respiratory tract pathogens *S. pyogenes* (a bacterium that causes scarlet fever) and *S. pneumoniae*.[\[1771\]](#)

- *In vitro* and clinical research concluded that peppermint was more effective than chlorhexidine (a drug used to treat diseases of the teeth and gums) in preventing the bacterium *S. mutans* and *S. pyogenes* from sticking together and forming plaque (biofilm), possibly leading to the prevention of cavities.[\[1772\]](#),[\[1773\]](#) Another study determined that peppermint oil kills pathogenic oral bacteria.[\[1774\]](#)
- Inhalation of peppermint oil enhanced cognitive performance and memory in people.[\[1775\]](#)
- Oral administration of peppermint oil in capsules prior to colonoscopy decreased the time required to perform the entire procedure, reduced colon spasm and pain, and improved patient satisfaction with the procedure in thirty-three adults.[\[1776\]](#) Another study found that spraying the stomach chamber directly with 20 ml of a 0.8% menthol solution prior to upper gastrointestinal endoscopy reduced peristalsis before and after the procedure.[\[1777\]](#) A third study concluded that when peppermint oil was mixed with the barium enema solution, residual spasms were significantly reduced during a barium enema examination.[\[1778\]](#)
- Three minutes of oral cleansing daily with a combination of tea tree, peppermint, and lemon oils helped reduce bad breath and production of volatile sulfur compounds (compounds excreted by oral bacteria that cause bad breath) in intensive care patients.[\[1779\]](#)
- Russian scientists found that inhaling peppermint oil (twenty minutes daily for two months) improved symptoms of pulmonary (lung) tuberculosis and prevented its recurrence in people.[\[1780\]](#),[\[1781\]](#)
- *In vitro* research reported that peppermint oil provides a sun protection factor (SPF) of almost 7.[\[1782\]](#)
- Clinical research suggests that peppermint oil slows gastrointestinal motility (the time required for food to travel through the digestive system), which may make it beneficial for diarrhea.[\[1783\]](#)
- Peppermint enhanced the absorption of aminophylline (a drug used to treat asthma and lung conditions) by 28% in healthy people.[\[1784\]](#) Interestingly, peppermint reduced the absorption of benzoic acid through the skin in low concentrations.[\[1785\]](#)
- A foot bath (107°F water) with salts and either oregano, thyme, cinnamon bark, lemongrass, clove, palmarosa, peppermint, lavender, or geranium significantly reduced fungi associated with athlete's foot *in vitro*.[\[1786\]](#)
- *In vitro* research concluded that peppermint oil enhances the effectiveness of oxytetracycline (a broad-spectrum antibiotic used to treat bacterial infections like acne, rosacea, and chest infections).[\[1787\]](#)
- The combination of peppermint and caraway oils reduces internal organ pain after inflammation has ceased in rats.[\[1788\]](#)
- Inhalation of peppermint oil reduced daytime sleepiness in people when they were subjected to conditions that normally increase daytime sleepiness.[\[1789\]](#)
- Headache was relieved when a combination of peppermint oil and ethanol was applied to the forehead and temples of healthy people with a sponge.[\[1790\]](#) When eucalyptus was added to the mixture the pain relieving effect was diminished, but cognitive performance was enhanced, as

was the muscle-relaxing and mentally relaxing effect.

- Peppermint oil effectively kills the larvae of and repels the mosquito responsible for dengue fever. [\[1791\]](#), [\[1792\]](#)



PETITGRAIN

Petitgrain of Bergamot: *Citrus aurantium* (leaves and twigs), *Citrus aurantium amara*, *Citrus bigaradia*; Petitgrain of Mandarin: *Citrus reticulata* (leaves and twigs)

FAMILY: Rutaceae

NOTE: Top-Middle

AROMA INTENSITY: Strong

AROMA: Citrusy, fresh, floral, slightly woody and herbaceous

COMMON EXTRACTION METHOD: Steam distilled from the leaves and twigs

POSSIBLE SUBSTITUTE OILS: Neroli, lavender, bergamot, niaouli (viridiflorol/para-cymene/1,8-cineole CT)

BLENDS WELL WITH: Bergamot, cassia, cinnamon, citronella, geranium, lemon, lemongrass, lime, lemon verbena, neroli, sage, spikenard, tangerine

RECOMMENDED DILUTION RANGE: 3%–50%; neat for some conditions

PRIMARY COMPOUNDS: [\[1793\]](#), [\[1794\]](#), [\[1795\]](#), [\[1796\]](#), [\[1797\]](#), [\[1798\]](#), [\[1799\]](#), [\[1800\]](#)

Citrus aurantium, *Citrus aurantium amara*, *Citrus bigaradia* (Petitgrain of Bergamot)

Linalool	18.6%–66.0%
Linalyl Acetate	12.4%–50.0%
Alpha-Terpineol	7.1%–12.9%
Trans-Carveol	0.0%–11.9%
Geranyl Acetate	0.0%–8.7%
Cis-Linalool Oxide	0.0%–8.1%

Gamma-Terpinene	0.0%–7.0%
Carvone	0.0%–5.8%
Neryl Acetate	2.2%–4.5%
Trans-Beta-Ocimene	3.1%–4.1%
Beta-Pinene	1.6%–3.6%
<i>Citrus reticulata</i> (Petitgrain of Mandarin)	
Dimethyl Anthranilate	13.2%–65.3%
Gamma-Terpinene	19.8%–47.9%
Para-Cymene	0.1%–16.3%
Limonene	0.0%–12.6%
Linalool	0.0%–9.6%
Alpha-Terpinene	0.0%–7.4%
Terpinen-4-ol	0.1%–7.1%
Beta-Phellandrene	0.0%–6.3%
Trans-IsoLimonene	0.0%–5.9%
Alpha-Terpinolene	0.6%–4.6%
Myrcene	0.0%–3.2%
Alpha-pinene	1.7%–2.8%
Beta-Pinene	0.0%–2.3%

OTHER COMPOUNDS: *Citrus aurantium* (leaves)—Sabinene, myrcene, limonene, cis-beta-ocimene, trans-beta-ocimene, nerol, neryl acetate, geranyl acetate; *Citrus reticulata* (leaves)—Alloocimene, limonene oxide, linalyl propionate, cuminic aldehyde, linalool oxide, caryophyllene oxide, alpha-thujene, sabinene, trans-ocimene

REPORTED THERAPEUTIC PROPERTIES: Antiseptic, **anti-inflammatory**, **antifungal**, antispasmodic, **antibacterial**, expels excess gas, deodorant, nervine (calms and soothes the nerves), supports liver function, eases nausea, encourages restful sleep, reduces excess sweating, helps reduce the appearance of blemishes, aids digestion, relaxing, uplifting, **antidepressant**, **reduces anxiety**, calms anger, stimulates creativity, encourages a fresh perspective

CAUTIONS:

- May be mildly photosensitizing (low risk). Avoid sun exposure to area of application for at least twelve hours after topical application.[\[1801\]](#)

SELECTED EVIDENCE:

- *C. reticulata* was effective against two leukemia cell lines *in vitro*.[\[1802\]](#)
- An animal model of obsessive compulsive disorder demonstrated that the oral administration of *C. aurantium* (a single dose or repeated doses of 0.5 to 1.0 g/kg for fifteen days) reduced obsessive compulsive behavior in mice.[\[1803\]](#)
- *C. reticulata* prevents pulmonary fibrosis in rats possibly by preventing oxidation, reducing collagen deposition and fibrosis (the formation of excess connective tissue) in the lungs, and

down-regulating CTGF protein and mRNA expression (CTFG and mRNA activity are involved in the triggering of fibrosis).[\[1804\]](#)

- o Oral administration of 0.5 to 1.0 g/kg of *C. aurantium* (leaf and peel) oil reduced anxiety and increased sleeping times of barbiturate drugs in mice.[\[1805\]](#)



PINE (Scots, Scotch)

Pinus sylvestris

FAMILY: Pinaceae

NOTE: Top

AROMA INTENSITY: Strong

AROMA: Fresh, woody, balsamic, clean

COMMON EXTRACTION METHOD: Steam distilled from the needles and twigs

POSSIBLE SUBSTITUTE OILS: Balsam fir, cypress, silver fir, galbanum, blue spruce

BLENDS WELL WITH: Bergamot, cajeput, camphor, cedarwood, clary sage, coriander, eucalyptus, frankincense, galbanum, grapefruit, juniper, lavender, lemon, lime, melaleuca (tea tree), marjoram, neroli, niaouli, peppermint, ravensara, ravintsara, rosemary, Spanish sage, spikenard, thyme, silver fir, white fir

RECOMMENDED DILUTION RANGE: 3%–50%; neat for some conditions

PRIMARY COMPOUNDS:[\[1806\]](#),[\[1807\]](#),[\[1808\]](#),[\[1809\]](#),[\[1810\]](#),[\[1811\]](#)

Alpha-pinene 14.8%–51.1%

Delta-3-Carene 0.1%–33.7%

Beta-Pinene 1.8%–29.4%

Camphene 0.4%–16.8%

Caryophyllene Oxide 0.0%–12.6%

Delta-Cadinene 0.0%–11.6%

Gamma-Cadinene 0.0%–11.1%

Alpha-Longifolene	0.0%–9.6%
Alpha-Cadinol	0.0%–7.7%
Germacrene D	0.2%–6.5%
Bicyclogermacrene	0.0%–6.2%
Cubenol	0.0%–5.1%
Beta-Caryophyllene	0.6%–4.9%
Tricyclene	0.1%–4.3%
Bornyl acetate	0.1%–3.9%
Trans-Verbenol	0.1%–3.5%
Beta-Myrcene	0.2%–3.4%

OTHER COMPOUNDS: Para-cymene, limonene, beta-phellandrene, alpha-campholene aldehyde, trans-pinocarveol, alpha-humulene, humulene epoxide, alpha-cadinene, alpha-murolene, beta-bisabolene, alpha-terpinene, terpinolene, sabinene, (Z)-beta-ocimene, (E)-beta-ocimene, gamma-terpinene, borneol, p-mentha-1,5-dien-8-ol, terpinen-4-ol, alpha-terpineol, thymol, undecanone-2, delta-elemene, terpinyl acetate, alpha-cubebene, alpha-copaene, beta-elemene, aromadendrene, alpha-humulene, alpha-cadinene, germacrene-d-4-ol, spathulenol, gleenol, 1-epi-cubenol, 1,10-di-epi-cubenol

REPORTED THERAPEUTIC PROPERTIES: Analgesic (pain relief), antibacterial, **antifungal**, anti-inflammatory, **antineuralgic**, antimicrobial, **antioxidant**, **nervine (calms and soothes the nerves)**, antirheumatic, aids detoxification, **antiseptic**, antiviral, anti-infectious, soothes various skin conditions, **decongestant**, clears excess mucous, disinfectant, diuretic, expectorant, antiparasitic, encourages normal bone turnover (remodeling), helps eliminate uric acid, **eases cough**, enhances metabolism, **balances respiratory function**, improves eye health and protects eyes from oxidative damage, reduces gallbladder inflammation and helps eliminate gallstones, stimulating, **stress management**, reduces anxiety, reduces anger, grounding, **relieves fatigue**

CAUTIONS:

- None currently known.

SELECTED EVIDENCE:

- Animal research suggests that pine oil may protect against osteoporosis by inhibiting osteoclast (cells that break down bone tissue to release minerals into the circulatory system) activity and normalizing bone turnover.[\[1812\]](#)
- Pine oil inhibits *C. hystoliticum* (a bacterium that can cause acute infection, fever, pain, edema, organ failure, and gas gangrene) and *C. ramosum* (a bacterium associated with obesity in animals).[\[1813\]](#)
- Animal research suggests that pine oil enhances the production of airway surface liquid (liquid found in the airways that is important in normal respiration, traps inhaled particles, and is involved in mucous secretion) in the trachea and salivary glands.[\[1814\]](#)
- *In vitro* research concluded that pine oil improves air quality by inhibiting several fungi, yeast, bacterium, and toxins associated with difficulty breathing, allergic rhinitis, watery eyes,

headaches, and flu-like symptoms.[\[1815\]](#)



RAVENSARA

Ravensara aromatica, *Ravensara anisata*, *Agathophyllum aromatica*

FAMILY: Lauraceae

NOTE: Top-Middle

AROMA INTENSITY: Medium

AROMA: Medicinal, woody, herbaceous, slightly spicy

COMMON EXTRACTION METHOD: Steam distilled from the leaves; also extracted from the bark (which is characterized by high levels of methyl chavicol (estragole)—83.0%–98.0%[\[1816\]](#))

POSSIBLE SUBSTITUTE OILS: Ravintsara (1,8-cineole CT), eucalyptus, myrtle, cajeput, cardamom, bay laurel, niaouli (1,8-cineole CT), petitgrain (mandarin), fennel (methyl chavicol CT), bay laurel

BLENDS WELL WITH: Bergamot, black pepper, cardamom, clary sage, cedarwood, eucalyptus, frankincense, geranium, ginger, grapefruit, lavender, lavandin, lemon, lime, marjoram, melaleuca (tea tree), pine, rosemary, sandalwood, thyme

RECOMMENDED DILUTION RANGE: Methyl chavicol and Methyl eugenol CT 1.5%–5%; 3%–20%; Alpha-terpinene, Sabinene, and Limonene CT 3%–50%; neat for some conditions

PRIMARY COMPOUNDS:[\[1817\]](#),[\[1818\]](#),[\[1819\]](#),[\[1820\]](#),[\[1821\]](#),[\[1822\]](#)

1,8-Cineole CT[#]

1,8-Cineole	31.0%–60.8%
Sabinene	11.0%–17.2%
Alpha-Terpineol	0.0%–12.4%
Limonene	0.0%–0.8%
Methyl-Chavicol (Estragole)	0.0%–0.7%

Alpha-Terpinene CT

Alpha-Terpinene	25.3%–27.7%
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Limonene	14.8%–21.8%
Sabinene	16.8%–19.4%
Terpinen-4-ol	7.0%–7.2%
Gamma-Terpinene	5.7%–5.9%
Alpha-pinene	3.9%–4.5%
Linalool	3.3%–4.5%
Myrcene	2.8%–3.2%
Beta-Pinene	2.7%–2.9%
Methyl Chavicol (Estragole)	0.0%–1.4%
Alpha-Thujene	1.2%–1.3%
Alpha-Phellandrene	1.2%–1.3%
Germacrene D	0.5%–1.1%
Methyl Eugenol	0.1%–1.1%

Limonene CT

Limonene	13.9%–22.5%
Sabinene	3.9%–16.4%
Isolatedene	0.0%–14.2%
Methyl Chavicol (Estragole)	0.1%–11.9%
Beta-Caryophyllene	1.5%–8.4%
Beta-Myrcene	5.0%–7.3%
Alpha-Terpinene	1.8%–7.1%
Alpha-pinene	3.0%–6.4%
Linalool	3.0%–5.7%
Methyl Eugenol	0.0%–5.2%
Terpinen-4-ol	1.7%–4.8%
Gamma-Terpinene	1.8%–4.1%
1,8-Cineole	0.1%–3.9%
Beta-Pinene	2.2%–2.9%
Beta-Phellandrene	1.0%–2.9%
Alpha-Thujene	0.4%–2.1%

*Methyl Chavicol (Estragole) CT**

Methyl Chavicol (Estragole)	61.6%–94.5%
(E)-Anethole	0.0%–20.1%
Methyl Eugenol	0.1%–8.5%
Limonene	0.1%–4.2%
Sabinene	0.1%–3.4%
Terpinen-4-ol	0.0%–2.2%
Linalool	0.7%–1.9%
Alpha-Copaene	0.0%–1.9%
Beta-Caryophyllene	0.4%–1.8%

Germacrene D	0.1%–1.6%
Alpha-Terpinene	0.1%–0.8%
<i>Methyl Eugenol CT</i>	
Methyl Eugenol	74.0%–81.6%
Alpha-Terpinene	0.6%–7.8%
Linalool	0.4%–4.7%
Methyl Chavicol (Estragole)	2.5%–4.5%
Limonene	0.7%–4.5%
Elemicin	0.6%–1.7%
Gamma-Terpinene	0.7%–1.6%
1,8-Cineole	0.0%–1.4%
Para-Cymene	0.5%–1.2%
Alpha-pinene	0.2%–1.2%
Beta-Caryophyllene	0.1%–0.9%
Terpinen-4-ol	0.6%–0.7%
Eugenol	0.0%–0.6%
Sabinene	0.4%–0.5%

<i>Sabinene CT</i>	
Sabinene	25.0%–34.4%
Linalool	6.5%–21.4%
Terpinen-4-ol	6.2%–12.0%
Limonene	7.2%–8.5%
Alpha-pinene	5.6%–8.1%
Beta-Pinene	3.9%–7.7%
Methyl Chavicol (Estragole)	1.8%–5.0%
Gamma-Terpinene	1.9%–4.4%
Myrcene	2.5%–3.4%
Para-Cymene	1.4%–3.0%
Alpha-Phellandrene	1.1%–2.8%
Germacrene D	1.5%–2.2%
Alpha-Thujene	1.2%–1.6%
Methyl Eugenol	0.3%–1.3%

#Given the great confusion between ravintsara and ravensara, it is possible that the 1,8-cineole CT is a misidentified sample from ravintsara.

*The methyl chavicol (estragole) CT is the most commonly reported in the literature.

OTHER COMPOUNDS: Delta-3-carene, camphene, gamma-cadinene, beta-elemene, (Z)-beta-ocimene

REPORTED THERAPEUTIC PROPERTIES: Analgesic (pain relief), antiallergenic, antibacterial, **antimicrobial**, **anti-infectious**, antiseptic, **antiviral**, antispasmodic, diuretic, eases cough, expectorant, **antifungal**, expels excess gas, **supports respiratory function**, aids lymph circulation,

wound healing, strengthens nails, stimulating, antidepressant, reduces anxiety, stress management, energizing, encourages creativity, aphrodisiac

CAUTIONS:

- Avoid with children under age 3 (1,8-cineole CT), particularly around the nose and mouth. Use very cautiously in children under age 5 due to high 1,8-cineole content. 1,8-cineole may cause seizures, central nervous system problems, or respiratory distress in young children.[\[1823\]](#),[\[1824\]](#),[\[1825\]](#) Use with great caution for children under 6 (all other CTs except alpha-terpinene CT) due to potentially high methyl eugenol and/or methyl chavicol content.[\[1826\]](#)
- Avoid during pregnancy and lactation due to potentially high estragole and/or methyl eugenol content.[\[1827\]](#) Estragole may cause genetic mutations and oxidative DNA damage.[\[1828\]](#)
- Avoid oral use (limonene, methyl chavicol, methyl eugenol CTs) due to toxic and carcinogenic (cancer-causing) potential of methyl eugenol and methyl chavicol.[\[1829\]](#),[\[1830\]](#),[\[1831\]](#) Caution is warranted orally for the 1,8-cineole CT due to the significant amounts of 1,8-cineole. Limit to small doses internally (adults—maximum 10 drops daily). Toxicity has been reported when eucalyptus (also high in 1,8-cineole) was ingested in large doses, and as few as 4 to 5 drops may cause problems in very sensitive individuals.[\[1832\]](#),[\[1833\]](#),[\[1834\]](#),[\[1835\]](#),[\[1836\]](#),[\[1837\]](#)
- Avoid with epilepsy and Parkinson's disease due to 1,8-cineole content. May exacerbate or cause seizures or convulsions based on 1,8-cineole content.[\[1838\]](#),[\[1839\]](#),[\[1839a\]](#)
- May interfere with pentobarbital and other barbiturates (medications for anxiety and insomnia) based on 1,8-cineole content.[\[1840\]](#),[\[1841\]](#)

SELECTED EVIDENCE:

- A nasal spray with lemon, ravensara, and niaouli oils (0.14 ml consisting of 0.014 ml lemon, 0.042 ml aloe vera juice, 0.0007 ml ravensara, 0.0007 g propolis, and 0.00042 ml niaouli oil) decreased the symptoms of allergic and nonallergic rhinopathy (nasal congestion, drainage, and obstruction of the nasal passages) in a clinical trial.[\[1842\]](#)
-



RAVINTSARA (Ho Leaf, Ho Sho)

Cinnamomum camphora (1,8-cineole CT)

FAMILY: Lauraceae

NOTE: Middle

AROMA INTENSITY: Strong

AROMA: Medicinal, penetrating, woody

COMMON EXTRACTION METHOD: Steam distilled from the leaves

POSSIBLE SUBSTITUTE OILS: Eucalyptus, niaouli (1,8-cineole CT), bay laurel, cajeput, cardamom, rosemary (1,8-cineole CT), ravensara (1,8-cineole CT), camphor (camphor CT), sage (camphor CT), rosemary (camphor CT), thyme (linalool CT), camphor (linalool CT)

BLENDS WELL WITH: Chamomile (German, Roman), copaiba, eucalyptus, frankincense, juniper, peppermint, pine, rosemary, wintergreen,

RECOMMENDED DILUTION RANGE: 3%–33%; neat for some conditions

PRIMARY COMPOUNDS: [\[1843\]](#), [\[1844\]](#), [\[1845\]](#), [\[1846\]](#), [\[1847\]](#), [\[1848\]](#), [\[1849\]](#), [\[1850\]](#), [\[1851\]](#)

1,8-Cineole CT

1,8-Cineole	53.8%–63.0%
Sabinene	14.1%–16.8%
Alpha-Terpineol	3.8%–10.3%
Alpha-pinene	3.7%–5.0%
Beta-Pinene	0.0%–3.5%
Alpha-Myrcene	0.0%–3.2%

Camphor CT

Camphor	40.5%–72.5%
Linalool	0.5%–22.9%

1,8-Cineole	1.0%–11.3%
Alpha-pinene	2.1%–5.0%
Safrole	0.1%–5.0%
Bicyclogermacrene	0.0%–5.0%
Limonene	0.0%–4.5%
Allo-aromadendrene	0.0%–4.4%
Camphene	0.0%–2.8%
Alpha-Terpineol	0.0%–2.3%
Caryophyllene	0.0%–2.2%

Linalool CT

Linalool	87.2%–95.3%
Beta-Caryophyllene	0.5%–2.2%
Camphene Hydrate	0.0%–1.5%

OTHER COMPOUNDS: *1,8-Cineole CT*—Alpha-thujene, myrcene, para-cymene, gamma-terpinene, cis-sabinene hydrate, delta-terpineol, terpinen-4-ol, alpha-humulene, beta-caryophyllene, Germacrene D, bicyclogermacrene; *Camphor CT*—2-Thujene, sabinene, p-mentha-1-en-4-ol, p-menth-1-en-8-ol, dihydro-cis-alpha-copaene-8-ol, gamma-elemene, germacrene D; *Linalool CT*—Beta-ocimene, camphor, alpha-terpineol, elemol, germacrene D, bicyclogermacrene

REPORTED THERAPEUTIC PROPERTIES: Analgesic (pain relief), anti-inflammatory, antirheumatic, antiarthritic, **antibacterial**, **antiviral**, **antifungal**, **anti-infectious**, antiseptic, reduces the appearance of blemishes, eases cough, relieves skin conditions, **supports respiratory system**, **relieves sinusitis**, reduces fever, antidepressant, reduces anxiety, stress management, combats fear, encourages self-confidence

CAUTIONS:

- Avoid with children under age 3 (camphor and 1,8-cineole CT), particularly around the nose and mouth. Use very cautiously in children under age 5 due to high 1,8-cineole content. 1,8-cineole may cause seizures, central nervous system problems, or respiratory distress in young children. [\[1852\]](#),[\[1853\]](#),[\[1854\]](#)
- Caution is warranted during pregnancy and while lactating due to significant camphor content (camphor CT). Ingestion of essential oils with significant levels of camphor may lead to abortion because fetuses lack the enzymes to process it.[\[1855\]](#) Camphor ingestion by infants and young children may cause cough, vomiting, seizure, burning sensation in the mucous membranes and eyes, or lack of voluntary coordination of muscle movements.[\[1856\]](#)
- Avoid with epilepsy and Parkinson's disease due to 1,8-cineole content. May exacerbate or cause seizures or convulsions based on 1,8-cineole content.[\[1857\]](#),[\[1858\]](#)[\[1858a\]](#)
- Caution is warranted orally due to the significant amounts of 1,8-cineole. Limit to small doses internally (adults—maximum 10 drops daily). Toxicity has been reported when eucalyptus (also high in 1,8-cineole) was ingested in large doses, and as few as 4 to 5 drops may cause problems in very sensitive individuals.[\[1859\]](#),[\[1860\]](#),[\[1861\]](#),[\[1862\]](#),[\[1863\]](#),[\[1864\]](#)
- The significant camphor content in ravintsara (camphor CT) may negatively impact red blood

cells and increase the risk of jaundice in children with Glucose-6-phosphate dehydrogenase deficiency (G6PD). [\[1865\]](#),[\[1866\]](#)

- May interfere with pentobarbital and other barbiturates (medications for anxiety and insomnia) based on 1,8-cineole content.[\[1867\]](#),[\[1868\]](#)

SELECTED EVIDENCE:

- Ravintsara inhibits *A. niger* (a common fungus that can infect humans and produce potent toxins, called mycotoxins) *in vitro*.[\[1869\]](#) Another study found that ravintsara inhibits *A. flavus* and its subsequent production of the toxin aflatoxin B1.[\[1870\]](#)
 - *In vitro* research concluded that ravintsara is a natural insecticide for fire ants, butterflies, and fruit flies.[\[1871\]](#)
 - Ravintsara's ability to inhibit *Candida* is superior to the antibiotics miconazole and clotrimazole.[\[1872\]](#)
 - *In vitro* research suggests that ravintsara oil inhibits *S. pyogenes* (a bacteria that causes strep throat, scarlet fever, impetigo, cellulitis, and tonsillitis).[\[1873\]](#)
-



ROMAN CHAMOMILE (Roman Camomile)

Chamaemelum nobile, *Anthemis nobilis*

FAMILY: Asteraceae (Compositae)

NOTE: Middle

AROMA INTENSITY: Medium

AROMA: Fresh, sweet, fruity, herbaceous

COMMON EXTRACTION METHOD: Steam distilled from the flowers

POSSIBLE SUBSTITUTE OILS: German chamomile, lavender

BLENDS WELL WITH: Bergamot, cassia, chamomile (German), clary sage, eucalyptus, geranium,

grapefruit, lavender, lemon, lime, melaleuca (tea tree), neroli, ravintsara, rose, tangerine, silver fir, white fir, ylang ylang

RECOMMENDED DILUTION RANGE: 5%–Neat

PRIMARY COMPOUNDS: [\[1874\]](#), [\[1875\]](#), [\[1876\]](#), [\[1877\]](#)

Isobutyl Angelate	24.5%–36.0%
Isoamyl Isobutyrate	5.3%–23.7%
2-Methylbutyl Angelate	13.0%–20.3%
Isoamyl Tiglate	11.7%–19.9%
Isoamyl Angelate	3.7%–17.9%
Propyl Tiglate	10.8%–13.1%
3-Methylbutyl Isobutyrate	5.2%–6.3%
Isobutyl Isobutyrate	1.4%–5.3%
Isoamyl 2-methylbutyrate	3.9%–4.5%
Trans-Pinocarveol	0.1%–4.5%

OTHER COMPOUNDS: Methyl 2-methylbutyrate, prenyl acetate, 2-methylbutyl acetate, 2-methylbutyl isobutyrate, alpha-pinene, camphene, pinocarvone, 2-methyl butyl methacrylate, isobutyl methacrylate, isopropyl angelate, methyl allyl angelate

REPORTED THERAPEUTIC PROPERTIES: Analgesic (pain relief), anti-inflammatory, antibacterial, antimicrobial, antiparasitic, **relieves headache**, nervine (calms and soothes the nerves), reduces fever, **relieves colic**, antiseptic, antirheumatic, **antineuralgic**, **antispasmodic**, expels excess gas, aids digestion, disinfectant, diuretic, **helps boils heal**, diminishes the appearance of scars and blemishes, **relieves skin conditions**, aids detoxification, supports liver function, **helps relieve painful menstruation**, wound healing, **relieves sunburn**, calming, relaxing, **reduces anxiety**, antidepressant, combats worrisome thoughts, helps eliminate sensitivity, stress management, **calms tantrums**, reduces anger, combats loneliness, reduces insecurity

CAUTIONS:

- None currently known.

SELECTED EVIDENCE:

- Roman chamomile helps decrease inflammation by mildly inhibiting the 5-lipoxygenase (5-LOX) enzyme that is involved in the inflammation response according to *in vitro* research. [\[1878\]](#)
- Inhalation (ten deep breaths from aromatherapy stones with 2 drops of the blend) of lavender, Roman chamomile, and neroli reduced the anxiety and stress of patients undergoing coronary angioplasty (the insertion of a catheter to open blocked coronary arteries). [\[1879\]](#)
- A sitz bath with or soap application of lavender, myrrh, neroli, rose, grapefruit, mandarin, orange, and Roman chamomile improves healing of the perineum following delivery and episiotomy. [\[1880\]](#)
- Animal research suggests that Roman chamomile is anti-inflammatory, relaxing, and sedating. [\[1881\]](#)

- Topical application of Roman chamomile extracts soothes a variety of inflammatory skin conditions in animals.[\[1882\]](#)
 - Inhalation of a combination of essential oils (anise, fennel, Roman chamomile, and peppermint) relieved the nausea of people suffering from nausea in a hospice or palliative care program.[\[1883\]](#)
 - Clinical and *in vitro* studies found that Roman chamomile extracts and essential oils penetrate into the deeper skin layers where it reduces the production and activity of pro-inflammatory molecules (prostaglandins, and COX-2 enzyme, without affecting the COX-1 enzyme) to reduce inflammatory skin conditions.[\[1884\]](#),[\[1885\]](#)
-



ROSE OTTO

Rosa damascena

FAMILY: Anacardiaceae

NOTE: Middle

AROMA INTENSITY: Strong

AROMA: Strong floral, sweet

COMMON EXTRACTION METHOD: Steam distilled from the flowers

POSSIBLE SUBSTITUTE OILS: Geranium, citronella

BLENDS WELL WITH: Bay laurel, bergamot, black pepper, cardamom, cedarwood, chamomile (German, Roman), citronella, clary sage, copaiba, eucalyptus, geranium, helichrysum, jasmine, lavender, lemongrass, melissa, neroli, palo santo, patchouli, pine, sandalwood, spikenard, vetiver, ylang ylang

RECOMMENDED DILUTION RANGE: 3%–50%; neat for some conditions

PRIMARY COMPOUNDS:[\[1886\]](#),[\[1887\]](#),[\[1888\]](#),[\[1889\]](#),[\[1890\]](#),[\[1891\]](#),[\[1892\]](#),[\[1893\]](#)

Bulgarian

Citronellol + Nerol

21.6%–31.9%

ISO 9842 Standard[\[1894\]](#)

25.0%–46.0%

Geraniol	4.8%–25.3%	12.0%–22.0%
Nonadecane	8.1%–19.2%	8.0%–15.0%
Heneicosane	1.1%–8.6%	3.0%–5.5%
Heptadecane	2.7%–5.1%	1.0%–2.5%
2-Phenylethanol	0.2%–1.2%	0.0%–3.5%
Ethanol	0.0%–0.9%	0.0%–2.0%

Indian[#] *Bureau of Indian Standard*^[1895]

Citronellol + Nerol	2.2%–44.9%	32.0%–46.0%
Geraniol	2.5%–26.5%	23.0%–32.0%
Nonadecane	7.3%–24.7%	
Heneicosane	0.0%–19.7%	
Tricosane	0.0%–11.3%	
2-Phenylethanol	0.4%–9.6%	3.0%–7.0%
Heptadecane	0.5%–6.0%	
Farnesol	0.3%–5.4%	
Eicosane	0.1%–5.0%	
Geranyl Acetate	0.1%–4.1%	
Eugenol	0.0%–3.3%	
Alpha-Terpineol	0.1%–2.7%	

[#]Indian rose oil should not contain more than 7% 2-phenylethyl alcohol according to the Bureau of Indian standard for rose essential oil. Essential oils reporting more than this are generally fraudulent and adulterated with synthetic 2-phenylethyl alcohol.

Iranian^{*}

Citronellol	12.6%–53.4%
Nonadecane	0.0%–51.2%
Neral	0.0%–44.8%
Dihydrolinalool	0.0%–39.2%
Geraniol	0.0%–22.7%
Eicosane	0.7%–20.5%
Docosane	0.0%–19.5%
Heneicosane	0.0%–18.0%
Disiloxane	0.0%–17.6%
Citronellyl Formate	0.0%–14.6%
Geranial	0.0%–12.3%
Linalyl Formate	0.0%–11.9%
Hexadecanol	0.0%–7.8%
Octadecane	0.0%–6.1%
Undecanol	0.0%–5.5%
Occidentalol Acetate	0.0%–4.0%

^{*}Iranian rose oil has five distinct chemotypes: *Citronellol*—40.3%–42.2% (nonadecane 15.9%–26.3%, geranial 0.0%–12.3%); *Dihydrolinalool*—30.8%–39.2% (nonadecane 10.7%–26.5%, linalyl formate 0.0%–11.9%); *Geraniol*—37.5% (citronellyl formate 14.6%, nonadecane 13.9%); *Neral*—31.7%–44.8% (nonadecane 20.0%–20.5%, citronellyl formate 7.5%–7.8%); and *Nonadecane*—22.4%–51.2% (heneicosane 18.0%, eicosane 6.2%).^[1896]

<i>Turkish</i>		<i>ISO 9842 Standard</i> [1897]
Citronellol	24.5%–43.0%	34.0%–49.0%
Geraniol	2.1%–18.0%	8.0%–20.0%
Nonadecane	8.2%–18.9%	6.0%–13.0%
Ethanol	0.0%–13.4%	0.0%–7.0%
Heneicosane	2.9%–8.9%	2.0%–4.0%
Nerol	0.8%–7.6%	3.0%–11.0%
2-Phenylethanol	0.5%–1.2%	0.0%–3.0%
Heptadecane	0.2%–0.5%	0.8%–3.0%

OTHER COMPOUNDS: *Bulgarian*—Gamma-murolene, methyl eugenol (up to 3.3%), linalool, citronellyl acetate, farnesol, beta-caryophyllene, eugenol, geranyl acetate, alpha-guaiene, alpha-caryophyllene, octadecane; *Indian*—Para-cymene, alpha-pinene, linalool, octadecane, 1-docosene, tetracosane, pentacosane, methyl eugenol (less than 1.2%), beta-bourbonene, beta-elemene, beta-caryophyllene, alpha-humulene, alpha-cadinene; *Iranian*—Nerol, kaempferol, methyl eugenol (up to 2.6%), cis-farnesol, heptadecane, pentacosane; *Turkish*—Alpha-pinene, gamma-murolene, myrcene, methyl eugenol (up to 2.5%), cis-rose oxide, pentadecane, alpha-guaiene, linalool, citronellyl acetate, alpha-humulene, neral, delta-guaiene, heptadecene, geranyl acetate, beta-caryophyllene, eugenol, alpha-guaiene, heptadecane, alpha-caryophyllene, octadecane, tricosane, eicosane, 2-phenylethyl acetate

REPORTED THERAPEUTIC PROPERTIES: Anti-inflammatory, **antiseptic**, antispasmodic, astringent, antiviral, reduces fever, antibacterial, anticonvulsive, **balances heart function**, reduces the appearance of blemishes, stretch marks, and scars, **nourishes and moistens skin, balances female hormones and helps regulate menstruation**, supports liver function, eases cough, relieves constipation, **nervine (calms and soothes the nerves)**, purifies the blood, encourages restful sleep, **stress management, antidepressant, aphrodisiac**, combats anger, relieves deep despair and grief, encourages feelings of love, **releases traumatic memories**, reduces loneliness

CAUTIONS:

- Dilution recommended for topical application of rose oil with high levels of geraniol. Geraniol is metabolized via the CYP450 pathway into metabolites such as geranial and neral and may cause sensitization and irritation when applied topically.[\[1898\]](#)

SELECTED EVIDENCE:

- A sitz bath with or soap application of lavender, myrrh, neroli, rose, grapefruit, mandarin, orange, and Roman chamomile improves healing of the perineum following delivery and episiotomy.[\[1899\]](#)
- A daily abdominal massage with a combination of rose, cinnamon, clove, and lavender oils in an almond carrier oil for seven days prior to menstruation significantly reduced painful menstruation and excess menstrual bleeding in women suffering from painful menstruation.[\[1900\]](#) A second study found that painful menstrual cramps were relieved in women by massaging the abdomen with two drops of lavender, and one drop each of rose and clary sage in 5 ml of

almond oil.[\[1901\]](#)

- Massaging the hands with lavender and rose oil (2% dilution) for fifteen minutes twice weekly for four consecutive weeks reduced depression and anxiety in postpartum women.[\[1902\]](#)
 - Citronellol relieves oral and facial pain by modulating central nervous system activity in mice.[\[1903\]](#)
 - Animal research suggests that citronellol lowers blood pressure by increasing vasodilation (relaxation of the muscular wall and widening of the blood vessels).[\[1904\]](#)
 - Rose oil helps decrease inflammation by mildly inhibiting the 5-lipoxygenase (5-LOX) enzyme that is involved in the inflammation response according to *in vitro* research.[\[1905\]](#)
 - Animal research suggests that rose oil prevents intestinal spasms.[\[1906\]](#)
 - Rose oil relieves pain by activating the TRPV1 receptor (a molecular sensor that detects painful sensations, and when activated triggers pathways that reduce pain caused by heat and inflammation) *in vitro*.[\[1907\]](#)
 - Animal research suggests that injection of rose oil influences neurotransmitter production pathways and reduces morphine withdrawal symptoms.[\[1908\]](#)
 - Rose oil reduces the number and severity of seizures caused by PTZ in rats.[\[1909\]](#),[\[1910\]](#)
 - Oral administration of rose oil (5 mg/kg three times daily) significantly reduced the frequency of seizures in children (aged 3 to 13 years old) that were not controlled by standard drug options.[\[1911\]](#)
 - Animal research concluded that rose oil significantly relaxes the smooth muscle of the trachea, with comparable effectiveness to the drug theophylline.[\[1912\]](#)
 - Rose oil possesses strong antimicrobial activity against *E. coli*, *P. aeruginosa*, *B. subtilis*, *S. aureus*, *C. violaceum*, and *E. carotovora* *in vitro*.[\[1913\]](#)
 - Inhalation of rose oil significantly reduced the pain associated with kidney stones in emergency room patients when combined with conventional medications.[\[1914\]](#)
 - Inhalation of rose oil reverses disruption in the function of the skin barrier (protection against harmful organisms, encouraging hydration, and gatekeeper for nutrient absorption) caused by chronic stress in rats and humans.[\[1915\]](#)
 - Animal research suggests that inhalation of rose oil reduces anxiety and conflict in mice and rats.[\[1916\]](#),[\[1917\]](#),[\[1918\]](#)
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ROSEMARY

Rosmarinus officinalis

FAMILY: Lamiaceae (Labiatae)

NOTE: Top-Middle

AROMA INTENSITY: Strong

AROMA: Strongly herbaceous, slightly woody and balsamic, medicinal

COMMON EXTRACTION METHOD: Steam distilled from the flowers and leaves

POSSIBLE SUBSTITUTE OILS: Sage (1,8-cineole CT), spike lavender, lavandin, myrtle, niaouli (viridiflorol CT), Spanish sage, spike lavender, spruce (black), blue spruce, sage (camphor CT), Spanish sage, balsam fir, silver fir

BLENDS WELL WITH: Bay laurel, basil, bergamot, black pepper, blue cypress, cajeput, camphor, cassia, cedarwood, cinnamon, citronella, clary sage, clove, coriander, eucalyptus, frankincense, geranium, grapefruit, lavender, lemon, lime, marjoram, melaleuca (tea tree), orange, oregano, palmarosa, patchouli, peppermint, pine, petitgrain, ravensara, ravintsara, sage, tangerine, thyme, vetiver

RECOMMENDED DILUTION RANGE: 3%–20%; neat for some conditions

PRIMARY COMPOUNDS: [\[1919\]](#), [\[1920\]](#), [\[1921\]](#), [\[1922\]](#), [\[1923\]](#), [\[1924\]](#), [\[1925\]](#), [\[1926\]](#), [\[1927\]](#), [\[1928\]](#), [\[1929\]](#), [\[1930\]](#), [\[1931\]](#), [\[1932\]](#)

1,8-Cineole CT

1,8-Cineole	41.6%–52.4%
Camphor	7.9%–18.9%
Alpha-pinene	5.2%–15.8%
Camphene	3.0%–11.1%
Beta-Pinene	4.8%–7.5%
Alpha-Terpineol	0.0%–4.9%
Borneol	2.6%–4.8%
Caryophyllene	0.1%–4.2%

Alpha-Pinene CT

Alpha-pinene	14.1%–62.2%
1,8-Cineole	5.3%–26.5%
Camphor	2.4%–18.9%
Verbenone	2.3%–15.3%
Bornyl acetate	0.0%–14.3%
Borneol	3.4%–13.7%
Beta-Pinene	1.1%–12.0%
Camphene	5.5%–11.5%
Alpha-Phellandrene	0.1%–7.9%
Myrcene	0.6%–4.9%
Sabinene	0.0%–4.6%

Beta-Myrcene CT

Beta-Myrcene	17.9%–30.0%
Alpha-pinene	8.8%–16.5%
1,8-Cineole	8.0%–14.5%
Limonene	2.9%–10.6%
Camphor	2.1%–9.0%
Caryophyllene	0.0%–8.3%
Camphene	1.3%–5.1%

Borneol CT

1,8-Cineole	20.0%
Borneol	15.6%
Camphor	15.3%
Verbenone	8.4%
Alpha-pinene	8.3%
Bornyl acetate	5.0%

Bornyl Acetate CT

Alpha-pinene	7.7%–35.8%
Bornyl acetate	14.3%–20.3%
Verbenone	0.0%–20.3%
Caryophyllene	0.0%–13.6%
1,8-Cineole	5.3%–12.8%
Camphor	6.4%–10.4%
Borneol	3.6%–8.4%
Camphene	4.2%–7.0%
Verbenone	0.0%–5.7%
Limonene	0.1%–4.6%

Camphor CT

Camphor	14.9%–35.8%
1,8-Cineole	9.0%–31.6%
Alpha-pinene	6.7%–24.7%
Borneol	0.0%–11.6%
Camphene	5.2%–11.2%
Sabinene	0.0%–5.1%
Myrcene	2.3%–4.9%
Para-Cymene	0.0%–3.8%
Beta-Pinene	2.5%–3.4%
Limonene	2.8%–3.1%
Linalool	0.0%–3.1%
Borneol	2.9%–3.0%

Verbenone CT

Verbenone	7.6%–24.9%
Bornyl acetate	2.0%–17.0%
Camphor	2.9%–14.9%
Alpha-pinene	2.5%–14.7%
1,8-Cineole	3.4%–9.0%
Borneol	0.3%–7.3%
Limonene	0.0%–7.1%
Linalool	1.0%–6.6%
Para-Cymene	1.1%–6.3%
Myrcene	0.5%–5.4%
Alpha-Terpineol	2.4%–4.9%

OTHER COMPOUNDS: Linalool, alpha-terpineol, para-cymene, ar-curcumene, 1-nonanol, terpinen-4-ol, limonene, 1-octen-3-ol, alpha-phellandrene, sabinene, (E)-pinocarveol, (E)-myrtanol, carvone, (Z)-myrtanol

REPORTED THERAPEUTIC PROPERTIES: Analgesic, antiarthritic, **antibacterial**, antioxidant, antirheumatic, **antispasmodic**, antineuralgic, aphrodisiac, **antiseptic**, astringent, anticancer, expels excess gas, decongestant, stops excess bleeding, strengthens and nourishes hair, **stimulates hair growth**, oral cleanliness, **relieves painful menstruation**, stimulates and strengthens cardiovascular function, **aids digestion**, diuretic, helps normalize bone remodeling, expectorant, antifungal, **helps reduce the appearance of blemishes**, supports liver function, nervine (calms and soothes the nerves), regenerative, **relieves headache (migraine)**, increases redness and circulation to a localized area, stimulates gallbladder function and the release of bile, **relieves skin conditions**, wound healing, immune support, increases sweating, insect repellent, **aids memory**, **boosts mental activity**, mentally stimulating, stress management, reduces fatigue and burnout, energizing, promotes confidence, antidepressant, reduces confusion

CAUTIONS:

- Avoid with children under age 3, particularly around the nose and mouth (1,8-cineole CT and camphor CT). Use very cautiously in children under age 5 due to high 1,8-cineole and camphor content. 1,8-cineole may cause seizures, central nervous system problems, or respiratory distress in young children.[\[1933\]](#),[\[1934\]](#),[\[1935\]](#) Several cases of camphor poisoning and/or seizures from ingestion and topical application have been reported in children.[\[1936\]](#),[\[1937\]](#) Ingestion of camphor-containing products has been lethal in children under age 2.[\[1938\]](#) Children 5 years and up may use camphor-containing essential oils topically in dilutions no stronger than 5%. 1,8-cineole may cause seizures, central nervous system problems, or respiratory distress in young children.[\[1939\]](#),[\[1940\]](#),[\[1941\]](#)
- Caution is warranted during pregnancy and while lactating due to potentially high camphor content (1,8-cineole CT and camphor CT). Ingestion of essential oils with significant levels of camphor may lead to abortion because fetuses lack the enzymes to process it.[\[1942\]](#) Camphor ingestion by infants and young children may cause cough, vomiting, seizure, burning sensation in the mucous membranes and eyes, or lack of voluntary coordination of muscle movements.[\[1943\]](#)
- Caution is warranted orally due to the significant amounts of 1,8-cineole and camphor content. Limit it to small doses internally (adults—maximum 10 drops daily). Toxicity has been reported when eucalyptus (also high in 1,8-cineole) was ingested in large doses, and as few as 4 to 5 drops may cause problems in very sensitive individuals.[\[1944\]](#),[\[1945\]](#),[\[1946\]](#),[\[1947\]](#),[\[1948\]](#),[\[1949\]](#) Doses between 0.1 and 1.0 ml (3 to 30 drops) have been used in studies.[\[1950\]](#) Essential oils that contain significant amounts of camphor can be toxic when taken orally (usually single doses exceeding 2 ml), although the lethal dose for humans is estimated to be more than 5 ml in a single dose.[\[1951\]](#),[\[1952\]](#),[\[1953\]](#)
- Avoid with epilepsy and Parkinson’s disease due to 1,8-cineole and camphor content. May exacerbate or cause seizures or convulsions based on 1,8-cineole content.[\[1954\]](#),[\[1955\]](#),[\[1955a\]](#)
- The potentially high camphor content in various rosemary CTs may negatively impact red blood cells and increase the risk of jaundice in children with Glucose-6-phosphate dehydrogenase deficiency (G6PD).[\[1956\]](#),[\[1957\]](#)
- May interfere with enzymes that metabolize medications (NSAIDs, proton-pump inhibitors, acetaminophen, antiepileptics, immune modulators, blood-sugar medications, blood-pressure medications, antidepressants, antipsychotics, diabetic medications, antihistamines, antibiotics, and anesthetics).[\[1958\]](#),[\[1959\]](#)
- May interfere with pentobarbital and other barbiturates (medications for anxiety and insomnia) based on 1,8-cineole content.[\[1960\]](#),[\[1961\]](#)
- Avoid with those who have a compromised liver due to the risk of increased liver enzymes and liver damage (camphor CT).[\[1962\]](#)

SELECTED EVIDENCE:

- Rosemary oil killed two ovarian cancer cell lines and one liver cancer cell line *in vitro*.[\[1963\]](#) A review preclinical perspective study suggested that rosemary is a good candidate for clinical cancer studies because of its ability to suppress tumor development in several organs/tissues including the colon, breast, liver, stomach, and melanoma and leukemia cells.[\[1964\]](#)
- *In vitro* research concluded that rosemary prevents the spread of breast and androgen-sensitive prostate cancer cells.[\[1965\]](#) Another *in vitro* study concluded that rosemary oil protects DNA from damage and kills and promotes apoptosis of liver cancer cells.[\[1966\]](#)

- Rosemary oil causes destruction of liver cancer cells by modulating BCL2 and BAX genes expression *in vitro*.[\[1967\]](#) The BCL2 and BAX genes work together to weaken cell membranes and promote apoptosis.
- Topical application of a 1.5% solution containing lavender, marjoram, eucalyptus, rosemary, and peppermint (2:1:2:1:1 ratio), in a carrier oil consisting of 45% apricot, 45% almond, and 10% jojoba carrier oils significantly decreased pain and depression in people with arthritis.[\[1968\]](#)
- Oral administration of 1 ml of rosemary oil (1,8-cineole CT) every eight hours for forty-four weeks increased the blood pressure of people with low blood pressure without affecting heart rate.[\[1969\]](#)
- A daily scalp massage with thyme, rosemary, lavender, and cedarwood oils in a mixture of carrier oils (jojoba and grapeseed) improved alopecia areata (round patches of hair loss) in 44% of study participants.[\[1970\]](#)
- An abdominal massage with lemon, rosemary, and peppermint oil relieved constipation in the elderly.[\[1971\]](#) Interestingly, the effect of the massage lasted for two weeks after treatment.
- *In vitro* research concluded that rosemary essential oil inhibited *P. insidiosum* (a pathogenic oomycete that infects mammals and causes gangrenous ulcers on the skin and may restrict blood flow in the surrounding arteries).[\[1972\]](#)
- Animal research concluded that rosemary oil relieves pain by influencing opioid and serotonin receptor activity.[\[1973\]](#) Opioids are molecules naturally produced by the body that work similarly to morphine.
- *In vitro* research suggests that rosemary inhibits elastase activity (an enzyme involved in the breakdown of elastin and a causal factor in lung connective tissue diseases, disruption of the body's ability to kill pathogens, and delayed wound healing).[\[1974\]](#) The researchers concluded that topical administration may be beneficial for bullous pemphigoid (a skin condition that causes the formation of large blisters) and pulmonary emphysema (a chronic lung condition characterized by enlargement of the air sacs in the lungs).
- Rosemary oil helps decrease inflammation by mildly inhibiting the 5-lipoxygenase (5-LOX) enzyme that is involved in the inflammation response according to *in vitro* research.[\[1975\]](#) Another study concluded that rosemary oil stimulates nerve cell receptor function of alpha(1) and alpha(2) adrenergic receptors, which improves local blood circulation and relieves pain.[\[1976\]](#)
- *In vitro* research suggests that rosemary oil inhibits *P. falciparum* (a protozoan parasite that causes malaria in humans).[\[1977\]](#)
- Animal research concluded that rosemary oil protects the male reproductive system against oxidative stress and functional damage in diabetic rats.[\[1978\]](#)
- Rosemary oil completely inhibits germ tube formation (used by the spores to reproduce and spread) of *C. albicans* isolated from the mouths of denture wearers.[\[1979\]](#)
- Inhalation of rosemary oil increases feelings of alertness and affects brain wave activity (decreases alpha waves and increases beta waves) to a state of greater alertness.[\[1980\]](#) Increased alpha waves are associated with an awake but relaxed state (i.e. daydreaming), whereas elevated beta waves are associated with normal consciousness and a state of elevated alertness, logic, and critical reasoning.
- Oral administration of 100 to 400 μ l/kg of rosemary reduced colon lesions and inflammation in rats with colitis.[\[1981\]](#)
- Animal research suggests that rosemary oil may protect against osteoporosis by inhibiting

- osteoclast (cells that breakdown bone tissue to release minerals into the circulatory system) activity and normalizing bone turnover.[\[1982\]](#)
- *In vitro* and animal research suggests that rosemary oil reduces inflammation by inhibiting excessive leukocyte migration and adhesion to damaged tissue.[\[1983\]](#),[\[1984\]](#) Leukocytes travel to the site of damaged tissue to encourage tissue repair; however, when they migrate excessively to the area it causes an abnormal inflammatory response.
 - Rosemary oil increases intracellular reduced glutathione (GSH) levels and Nrf2-antioxidant responsive element (ARE)-reporter activity, which protects liver cells from damage and enhances liver cell survival *in vitro*.[\[1985\]](#) Nrf2 is a potent protein found within all cells (but particularly in the liver and kidneys) that acts as the master regulator of the cellular antioxidant system when activated by AREs. Once triggered, Nrf2 activates over 200 genes that metabolize drugs and toxins, protect against oxidative stress, remove damaged proteins, and normalize inflammation. It also interacts with other cells that together determine longevity and protect against age-related diseases like cancer and neurological disorders.[\[1986\]](#)
 - Animal research suggests that rosemary oil is useful for diabetic wounds. Topical application of rosemary oil accelerated the healing of wounds that had cut through all the layers of skin in diabetic mice.[\[1987\]](#)
 - Exposing people with dementia to 0.04 ml of lemon and 0.08 ml of rosemary oils on a gauze pad with an electric fan in the morning (9:00 a.m. to 11:00 a.m.) and 0.08 ml of lavender and 0.04 ml of orange oils in the evening (7:30 p.m. to 9:00 p.m.) significantly improved personal orientation related to cognitive function without any side effects.[\[1988\]](#)
 - Inhalation of rosemary and lavender oils reduced test-taking stress of graduate nursing students.[\[1989\]](#)
 - *In vitro* research suggests that rosemary oil inhibits gram-positive and drug-resistant bacterium (*E. faecalis*, *E. coli*) and fungus (*C. albicans*).[\[1990\]](#) Another *in vitro* study concluded that rosemary oil significantly inhibits *E. coli*, *S. typhi*, *S. enteritidis*, *S. sonnei*, and *C. albicans*, and reduced lipid peroxidation. A third study concluded that rosemary oil provides broad-spectrum antimicrobial activity against several bacterium and yeast strains that are associated with food spoilage, food poisoning, and human disease.[\[1991\]](#)
 - Rosemary oil caused *P. acnes* (the bacterium associated with acne) cell death by causing them to shed their lining, lose their normal shape, and leak their fluid *in vitro*.[\[1992\]](#)
 - Smelling rosemary or lavender for five minutes decreased cortisol levels and increased free-radical-scavenging activity in twenty-two healthy people.[\[1993\]](#)
 - *In vitro* research suggests that rosemary oil partially inhibits HSV-1.[\[1994\]](#)
 - Inhalation of rosemary oil improves overall memory quality and secondary memory (the ability to recall stored memories after a distraction and some time has passed) in healthy adults.[\[1995\]](#) A subsequent study attributed the cognitive and memory benefits of oral and inhaled rosemary oil to its 1,8-cineole content, which researchers concluded triggers neurochemical pathways involved in memory.[\[1996\]](#)
 - Oral administration of rosemary oil protected the liver from damage and prevented genetic mutation in rats.[\[1997\]](#)
 - Animal research concluded that rosemary oil prevents tracheal contractions.[\[1998\]](#)
 - A 1-8-cineole rich rosemary oil provided 68.3% repellency against ticks.[\[1999\]](#)
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SAGE (Common Sage, Dalmatian Sage)

Salvia officinalis

FAMILY: Labiatae

NOTE: Top

AROMA INTENSITY: Medium

AROMA: Fresh, warm, spicy, herbaceous, slightly medicinal

COMMON EXTRACTION METHOD: Steam distilled from the dried leaves

POSSIBLE SUBSTITUTE OILS: Rosemary (1,8-cineole CT), cajeput, cardamom, Spanish sage, camphor (camphor CT), ravintsara (camphor CT)

BLENDS WELL WITH: Bay laurel, bergamot, cajeput, camphor, chamomile (German, Roman), coriander, eucalyptus, lavender, lemon, lime, orange, neroli, palo santo, peppermint, petitgrain, ravensara, rosemary, Spanish sage, spikenard, tangerine, thyme, turmeric

RECOMMENDED DILUTION RANGE: Alpha-thujone, beta-thujone, and camphor CT, Wild—1.5%–20%; Cineole CT—3%–20%; 50% for some conditions

PRIMARY COMPOUNDS: [\[2000\]](#), [\[2001\]](#), [\[2002\]](#), [\[2003\]](#), [\[2004\]](#), [\[2005\]](#), [\[2006\]](#), [\[2007\]](#), [\[2008\]](#), [\[2009\]](#)

1,8-Cineole CT

1,8-Cineole	39.5%–50.3%
Camphor	8.8%–25.0%
Alpha-Thujone	0.1%–9.9%
Beta-Pinene	3.3%–7.3%
Beta-Caryophyllene	1.4%–5.5%
Camphene	0.2%–3.9%
Alpha-Thujone	0.1%–3.7%
Alpha-Terpineol	2.6%–3.1%
Alpha-Terpinyl Acetate	1.4%–2.9%
Viridiflorol	0.5%–2.9%

Borneol	1.5%–2.4%
<i>Alpha-Thujone CT</i>	
Alpha-Thujone	24.5%–52.9%
Camphor	5.5%–26.1%
Alpha-Thujone	3.5%–17.9%
1,8-Cineole	1.9%–15.9%
Camphene	4.8%–8.5%
Alpha-pinene	0.1%–5.9%
Alpha-Humulene	0.0%–5.6%
Beta-Pinene	0.7%–4.8%
Beta-Caryophyllene	0.0%–4.7%
Bornyl acetate	0.0%–4.5%
Limonene	1.1%–2.4%
Borneol	0.8%–2.3%

<i>Beta-Thujone CT</i>	
Beta-Thujone	20.4%–49.7%
Camphor	5.2%–29.5%
Alpha-Thujone	2.2%–18.4%
1,8-Cineole	5.0%–15.7%
Camphene	1.0%–9.9%
Beta-Pinene	1.0%–7.7%
Borneol	1.1%–8.8%
Limonene	1.3%–6.5%
Alpha-pinene	0.1%–5.5%

<i>Camphor CT</i>	
Camphor	19.8%–36.5%
Beta-Thujone	2.1%–28.6%
Alpha-Thujone	1.5%–28.3%
1,8-Cineole	3.6%–24.7%
Beta-Pinene	1.4%–14.5%
Camphene	2.1%–9.7%
Borneol	0.3%–6.2%
Limonene	1.8%–6.2%
Alpha-pinene	0.1%–5.3%

<i>Wild</i>	
Alpha-Thujone	14.1%–29.8%
Beta-Caryophyllene	5.2%–19.8%
1,8-Cineole	5.1%–16.8%
Viridiflorol	9.9%–16.4%

OTHER COMPOUNDS: Alpha-pinene, camphene, alpha-humulene, borneol, myrcene, beta-pinene, limonene, tricyclene, alpha-terpinolene, endo bornyl acetate, gamma-terpinene, terpinen-4-ol, (Z)-salvene, para-cymene, alpha-thujene, thymol, alpha-terpineol, alpha-phellandrene, (E)-beta-ocimene, myrtenol, (Z)-beta-ocimene, viridiflorol

REPORTED THERAPEUTIC PROPERTIES: Antiseptic, **antibacterial**, **antiviral**, antifungal, anti-inflammatory, antispasmodic, astringent, decongestant, expectorant, expels excess mucous, reduces excess sweating, **immune booster**, helps balance hormones, diuretic, wound healing, promotes fat utilization, nervine (calms and soothes the nerves), muscle relaxant, helps normalize bone remodeling, **aids memory**, mentally stimulating

CAUTIONS:

- Avoid with children under 6 due to thujone, 1,8-cineole, and camphor content. Cases of seizure have been reported in young children due to sage essential oil exposure.[\[2010\]](#),[\[2011\]](#) Several cases of camphor poisoning and/or seizures from ingestion and topical application have been reported in children.[\[2012\]](#),[\[2013\]](#) Ingestion of camphor-containing products has been lethal in children under age 2.[\[2014\]](#) 1,8-cineole may cause seizures, central nervous system problems, or respiratory distress in young children.[\[2015\]](#),[\[2016\]](#),[\[2017\]](#) Children 6 years and up may use sage essential oil topically in dilutions no stronger than 5%.
- Avoid during pregnancy and while lactating. Camphor ingestion may lead to abortion because fetuses lack the enzymes to process it.[\[2018\]](#) Essential oils high in thujone content may cause abortion.[\[2019\]](#),[\[2020\]](#) Camphor ingestion by infants and young children may cause cough, vomiting, seizure, burning sensation in the mucous membranes and eyes, or lack of voluntary coordination of muscle movements.[\[2021\]](#)
- Avoid oral consumption. Thujone is considered significantly neurotoxic and may damage the liver, and it is estimated that as little as 15 mg orally may negatively impact the central nervous system.[\[2022\]](#),[\[2023\]](#),[\[2024\]](#) As few as 12 drops of sage oil orally have reportedly caused a seizure and short coma in an adult.[\[2025\]](#) Camphor can be toxic when taken orally (usually single doses exceeding 2 ml), although the lethal dose for humans is estimated to be more than 5 ml in a single dose.[\[2026\]](#),[\[2027\]](#),[\[2028\]](#)
- Avoid with epilepsy and Parkinson's disease due to camphor, thujone, and 1,8-cineole content.[\[2029\]](#),[\[2030\]](#),[\[2031\]](#),[\[2032\]](#),[\[2033\]](#)
- The potentially high camphor content in various sage CTs may negatively impact red blood cells and increase the risk of jaundice in children with Glucose-6-phosphate dehydrogenase deficiency (G6PD).[\[2034\]](#),[\[2035\]](#)
- Avoid with those who have a compromised liver due to the risk of increased liver enzymes and liver damage.[\[2036\]](#)
- Chemotypes high in 1,8-cineole may interfere with pentobarbital and other barbiturates (medications for anxiety and insomnia).[\[2037\]](#),[\[2038\]](#)
- May interact with diabetes medications and cause low blood-sugar levels.[\[2039\]](#)

SELECTED EVIDENCE:

- Sage essential oil enhances cognitive performance in both healthy individuals and people with dementia or cognitive impairments according to a review of eight clinical studies.[\[2040\]](#),[\[2041\]](#)
 - An *in vitro* study concluded that sage promotes the destruction (apoptosis) of three melanoma cancer cell lines.[\[2042\]](#) Other research has found that it destroys leukemia, melanoma, and kidney cancer cells *in vitro*.[\[2043\]](#)
 - Sage oil inhibits oral squamous cancer cell growth *in vitro*.[\[2044\]](#)
 - *In vitro* research found that sage oil inhibits several microorganisms responsible for urinary tract infections (100% efficiency against *Klebsiella* and *Enterobacter* species, 96% against *E. coli*, 83% against *P. mirabilis*, and 75% against *M. morganii*).[\[2045\]](#)
 - A topical cream that contains St. John's wort, olive oil, *Origanum tourn ex. L.*, and sage oil stimulated the various stages of the wound healing process and demonstrated remarkable wound healing properties in mice and rats.
 - An *in vitro* study concluded that sage oil significantly inhibits *E. coli*, *S. typhi*, *S. enteritidis*, and *S. sonnei*, and reduced lipid peroxidation.
 - Sage oil reduces inflammation by inhibiting the excess production of nitric oxide without harming cells *in vitro*.[\[2046\]](#)
 - Animal research suggests that sage oil may protect against osteoporosis by inhibiting osteoclast (cells that break down bone tissue to release minerals into the circulatory system) activity and normalizing bone turnover.[\[2047\]](#)
 - *In vitro* research concluded that sage oil significantly inhibited *T. rubrum*, *E. floccosum* and *C. neoformans*.[\[2048\]](#) Sage oil disrupts the cytoplasmic membrane integrity of MRSA epidermidis, and enhances the effectiveness of oxacillin (a penicillin antibiotic that treats bacterial infections) against MRSA.[\[2049\]](#)
 - Sage oil may reduce the risk of denture stomatitis (an oral infection of *Candida* or thrush that causes inflammation of oral mucous membranes that primarily affects denture wearers or those who don't practice appropriate oral care) because it kills *C. albicans* and inhibits its adhesion to resinous surfaces *in vitro*.[\[2050\]](#)
 - Diffusion of 0.25 ml of sage oil in a room (for one, six, and twenty-four hours) disinfected the room of total airborne microbes (up to 73%) and yeasts and molds (up to 55%).[\[2051\]](#)
 - Sage oil increased cell sensitivity to insulin and prevented the production of sugar from noncarbohydrate sources within the body (gluconeogenesis) similar to the diabetes drug metformin in animals and *in vitro*.[\[2052\]](#) The researchers concluded that sage is a promising option to reduce the risk of type 2 diabetes.
 - Inhaling a combination of peppermint, artemisia, sage, lavender, and monarda improved the symptoms of people with chronic bronchitis being treated with standard options concurrently.[\[2053\]](#)
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Image Credit: Marilyn Barbone/Shutterstock

SANDALWOOD

Santalum album, Santalum paniculatum, Santalum spicatum, Santalum austrocaledonicum

FAMILY: Santalaceae

NOTE: Base

AROMA INTENSITY: Medium

AROMA: Woody, earthy, slightly balsamic

COMMON EXTRACTION METHOD: Steam distilled from the wood

POSSIBLE SUBSTITUTE OILS: Cedarwood, lavender

BLENDS WELL WITH: Basil, bergamot, black pepper, blue cypress, cardamom, cedarwood, chamomile (German, Roman), coriander, cypress, frankincense, juniper, lavender, myrrh, neroli, palo santo, palmarosa, patchouli, petitgrain, ravensara, rose, Spanish sage, vetiver, ylang ylang

RECOMMENDED DILUTION RANGE: 3%–33%; neat for some conditions

PRIMARY COMPOUNDS: [\[2054\]](#), [\[2055\]](#), [\[2056\]](#), [\[2057\]](#), [\[2058\]](#), [\[2059\]](#), [\[2060\]](#), [\[2061\]](#), [\[2062\]](#), [\[2063\]](#), [\[2064\]](#), [\[2065\]](#)

Santalum album (East Indian)

(Z)-Alpha-Santalol	40.4%–57.1%
(Z)-Beta-Santalol	20.3%–30.5%
(Z)-Alpha-Trans-Bergamotol	2.2%–17.2%
(Z)-Epi-Beta-Santalol	4.9%–11.2%
Beta-Santalene	0.9%–5.9%
(Z)-Nuciferol	1.8%–5.2%

Santalum paniculatum (Hawaiian)

(Z)-Alpha-Santalol	39.8%–42.6%
(Z)-Beta-Santalol	13.7%–16.2%
(Z)-Alpha-Trans-Bergamotol	4.2%–5.1%
(Z)-Epi-Beta-Santalol	3.1%–4.2%

(Z)-Nuciferol 3.2%–4.8%

Santalum austrocaledonicum (New Caledonian, Pacific Island Sandalwood)

(Z)-Alpha-Santalol 28.9%–48.4%

(Z)-Beta-Santalol 13.5%–22.0%

(Z)-Lanceol 0.0%–9.1%

(Z)-Alpha-Trans-Bergamotol 0.2%–9.0%

(Z)-Nuciferol 1.6%–8.7%

(Z)-Epi-Beta-Santalol 1.9%–5.4%

Santalum spicatum (Western Australian)

(E,E)-Farnesol 9.3%–38.7%

(Z)-Alpha-Santalol 5.5%–27.3%

Alpha-Bisabolol 4.9%–10.7%

(Z)-Beta-Santalol 2.1%–10.5%

Beta-Curcumene-12-ol 0.0%–7.2%

(Z)-Nuciferol 5.6%–6.5%

OTHER COMPOUNDS: *Santalum album* (East Indian)—Para-benzoquinone, alpha-santalene, teresantalol, epi-beta-santalene, 2-carene, alpha-curcumene, trans-beta-santalol, cis lanceol; *Santalum paniculatum* (Hawaiian)—E-nerolidol, beta-bisabolol, alpha-bisabolol, (Z)-lanceol, (Z)-gamma-curcumen-12-ol, z-beta-curcumene-12-ol, alpha-santalene, beta-santalene, epi-beta-santalene, alpha-santalol; *Santalum austrocaledonicum* (New Caledonian, Pacific Island Sandalwood)—Beta-santalene, epi-beta-santalene, alpha-curcumene, epi-beta-santalol, alpha-santalol, alpha-bisabolol, dihydro-alpha-santalol, (E,E)-farnesol, campherenol, epi-alpha-santalol, (Z)-gamma-curcumene-12-ol, (Z)-gamma-bisabolen-12-ol, spirosantalol, beta-bisabolol, epi-beta-bisabolol; *Santalum spicatum* (Western Australian)—Z-beta-curcumene-12-ol, (Z)-alpha-trans-bergamotol, z-gamma-curcumen-12-ol, bisabola-2,10-dien-6,13-diol, dendrolasin, (Z)-lanceol, beta-bisabolol, (Z)-lanceol, epi-beta-bisabolol, (Z)-12-hydroxy-sesquicineole, alpha-santalene, beta-curcumene, epi-beta-santalol, beta-santalene, guaiol

REPORTED THERAPEUTIC PROPERTIES: Analgesic (pain relief), antiseptic, antispasmodic, astringent, antibacterial, anti-inflammatory, antitumor, stimulates lymph drainage, expels excess gas, antineuralgic, reduces fever, **tones and strengthens the cardiovascular system**, disinfectant, reduces the appearance of scars and blemishes, **relieves skin conditions** (especially those that involve inflammation), decongestant, **eases cough**, diuretic, **nourishes and softens skin**, helps lower high blood pressure, **antifungal**, sedating, aids concentration and memory, **aphrodisiac**, grounding, reduces aggressive behavior, encourages acceptance, stress management, reduces irritability and despondency, diminishes guilt

CAUTIONS:

- Australian sandalwood may interfere (very low risk) with enzymes responsible for metabolizing medications based on alpha-bisabolol content (NSAIDs, proton-pump inhibitors, acetaminophen, antiepileptics, immune modulators, blood-sugar medications, blood-pressure

medications, antidepressants, antipsychotics, diabetic medications, antihistamines, antibiotics, and anesthetics).[\[2066\]](#)

SELECTED EVIDENCE:

- Sandalwood kills bladder cancer cells according to *in vitro* research.[\[2067\]](#)
 - *In vitro* research concluded that *S. album* oil prevented the replication of HSV-1 and HSV-2, with a stronger activity against HSV-1.[\[2068\]](#),[\[2069\]](#) Another study determined that sandalwood oil possesses high levels of virucidal activity against both drug-resistant and non-drug-resistant HSV-1.[\[2070\]](#)
 - Sandalwood helps decrease inflammation by strongly inhibiting the 5-lipoxygenase (5-LOX) enzyme that is involved in the inflammation response according to *in vitro* research.[\[2071\]](#)
 - Topical application of *S. album* reduced the number and spread of skin papillomas (benign skin growths caused by the human papilloma virus, HPV, which may be a precursor to squamous cell skin cancer) in mice.[\[2072\]](#) Another study concluded that topical application of sandalwood oil prevented skin cancer caused by chemicals in mice.[\[2073\]](#)
 - *In vitro* research suggests that sandalwood prevents the formation of pro-inflammatory molecules (cytokines, chemokines, prostaglandins, and COX enzymes) in skin cells in a similar manner to ibuprofen.[\[2074\]](#)
 - Sandalwood oil inhibits *P. falciparum* (the parasite that causes malaria in humans) *in vitro*.[\[2075\]](#)
 - Inhalation of sandalwood oil increased arousal, alertness, attentiveness, pulse rate, and blood pressure in humans.[\[2076\]](#)
 - Massaging a 20% sandalwood oil to the lower abdomen of healthy people balanced autonomic nervous system function and created more harmonized states and moods (adaptogenic).[\[2077\]](#)
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SILVER FIR (Silver Spruce)#

Abies alba

FAMILY: Pinaceae

NOTE: Top-Middle

AROMA INTENSITY: Medium

AROMA: Fresh, piney, clean, woody

COMMON EXTRACTION METHOD: Steam distilled from the needles (leaves)

POSSIBLE SUBSTITUTE OILS: White fir, balsam fir, blue spruce, spruce (black), palo santo, blue cypress, juniper (needles)

BLENDS WELL WITH: Balsam fir, birch, cassia, blue spruce, cedarwood, chamomile (German, Roman), cypress, frankincense, galbanum, lavender, lemon, myrtle, palo santo, pine, sandalwood, spruce (black), tsuga, white fir, wintergreen

RECOMMENDED DILUTION RANGE: 5%–Neat

PRIMARY COMPOUNDS: [\[2078\]](#), [\[2079\]](#), [\[2080\]](#)

Limonene	7.5%–54.7%
Alpha-pinene	2.9%–31.7%
Bornyl acetate	1.0%–30.3%
Camphene	5.6%–19.8%
Beta-Pinene	0.5%–15.5%
Delta-3-Carene	0.0%–13.9%
Tricyclene	0.8%–12.9%
Beta-Caryophyllene	2.2%–8.4%
Santene	0.0%–5.0%
Alpha-Humulene	0.8%–4.6%
Sabinene	0.0%–4.3%

#Both *Abies alba* and *Abies concolor* are referred to as white fir, and both are available on the essential oil market. *Abies alba* is more commonly called silver fir or silver spruce, whereas *A. concolor* is called white fir according to the United States Department of Agriculture. [\[2081\]](#) They are two distinct species, and the chemical compounds are very different. [\[2082\]](#) *A. concolor* is the true white fir essential oil.

OTHER COMPOUNDS: Myrcene, beta-phellandrene, alpha-terpinolene, linalool, alpha-campholenic aldehyde, endoborneol, alpha-terpineol, alpha-longipinene, delta-3-carene, alpha-cedrene, alpha-himachalene, cis-caryophyllene, gamma-himachalene, widdrene, beta-selinene, alpha-selinene, beta-himachalene, alpha-amorphene, delta-cadinene, caryophyllene oxide, longiborneol, beta-paciulan, alpha-cadinol, t-muurolol

Therapeutic Properties: **Analgesic (pain relief)**, **anti-inflammatory**, antiarthritic, antirheumatic, antimicrobial, anticancer, antiseptic, **antioxidant**, **aids circulation**, increases redness and circulation of a localized area, **antispasmodic**, expectorant, disinfectant, removes excess mucous, relieves cough, **supports respiratory function**, reduces fever, stimulating, energizing, **encourages feelings of stability and empowerment**

CAUTIONS:

- None currently known.

SELECTED EVIDENCE:

- Silver fir inhibits organisms (*C. butyricum*, *C. intestinale*, and *C. ramosum*) that commonly infect the gastrointestinal system, cervix, and vagina and cause a variety of human diseases.[\[2083\]](#)
 - Silver fir mildly inhibits *S. aureus* *in vitro*.[\[2084\]](#)
 - Silver fir is a potent free-radical scavenger according to *in vitro* research.[\[2085\]](#)
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SPANISH SAGE

Salvia lavandulifolia, *Salvia lavandulaefolia*

FAMILY: Lamiaceae (Labiatae)

NOTE: Middle

AROMA INTENSITY: Medium

AROMA: Herbaceous, medicinal, slightly woody and balsamic

COMMON EXTRACTION METHOD: Steam distilled from the flowers, buds, and leaves **Possible**

Substitute Oils: Sage (1,8-cineole CT), rosemary (1,8-cineole CT), niaouli (viridiflorol CT), spike lavender, lavandin

BLENDS WELL WITH: Bergamot, camphor, cedarwood, cinnamon, citronella, clary sage, clove, cypress, grapefruit, lavandin, lavender, lemon, lime, orange, patchouli, pine, sandalwood, tangerine, thyme

RECOMMENDED DILUTION RANGE: 3%–20%; neat for some conditions

PRIMARY COMPOUNDS:[\[2086\]](#),[\[2087\]](#),[\[2088\]](#),[\[2089\]](#)

1,8-Cineole	13.0%–33.8%
Camphor	6.1%–31.0%
Alpha-pinene	4.9%–17.5%
Beta-Pinene	4.6%–17.3%
Viridiflorol	0.0%–12.0%

Delta-Terpineol	0.3%–12.0%
Camphene	5.6%–11.0%
Limonene	0.0%–10.4%
Ledol	0.0%–10.8%
Myrcene	0.1%–10.0%
Beta-Phellandrene	0.1%–9.3%
Beta-Caryophyllene	1.2%–8.5%
Camphene	5.2%–7.1%
Geranyl Acetate	0.0%–4.9%
Linalyl Acetate	0.0%–4.2%

OTHER COMPOUNDS: Sabinene, linalool, trans-sabinol, borneol, terpinen-4-ol, alpha-terpineol, linalyl acetate, sabinyl acetate, bornyl acetate, terpinyl acetate, geranyl propionate

Therapeutic Properties: **Analgesic (pain relief)**, anti-inflammatory, antispasmodic, antirheumatic, antimicrobial, **antimicrobial**, decongestant, eases cough, balances menstruation, balances hormones, **relieves skin disorders**, reduces excess sweating, aids circulation, reduces fever, wound healing, **aids memory**, reduces anxiety, revitalizing, aids concentration, stress management, antidepressant, **aids cognition**, combats grief and fear

CAUTIONS:

- Use cautiously with children under 6 due to potentially high camphor and 1,8-cineole content. Several cases of camphor poisoning and/or seizures from ingestion and topical application have been reported in children.[\[2090\]](#),[\[2091\]](#) Ingestion of camphor-containing products has been lethal in children under age 2.[\[2092\]](#) 1,8-cineole may cause seizures, central nervous system problems, or respiratory distress in young children.[\[2093\]](#),[\[2094\]](#),[\[2095\]](#) Children 5 years and up may use camphor-containing essential oils topically in dilutions no stronger than 5%. Camphor ingestion by infants and young children may cause cough, vomiting, seizure, burning sensation in the mucous membranes and eyes, or lack of voluntary coordination of muscle movements.[\[2096\]](#)
- Caution is warranted during pregnancy and while lactating due to potentially high camphor and small sabinyl acetate content. Ingestion of essential oils with significant levels of camphor may lead to abortion because fetuses lack the enzymes to process it.[\[2097\]](#) Sabinyl acetate is also considered an abortifacient based on large doses administered to animals that prevented implantation and impaired fertility.[\[2098\]](#),[\[2099\]](#) However, Spanish sage usually has less than 10% sabinyl acetate, and the studies that considered it an abortifacient injected large doses of sabinyl acetate directly into pregnant mice. When the camphor and sabinyl acetate content of Spanish sage are both considered, it is reasonable to limit topical application and avoid oral administration during pregnancy and lactation.
- Avoid with epilepsy and Parkinson's due to potentially high camphor and 1,8-cineole content.[\[2100\]](#),[\[2101\]](#),[\[2102\]](#)
- The potentially high camphor content in Spanish sage may negatively impact red blood cells and increase the risk of jaundice in children with Glucose-6-phosphate dehydrogenase deficiency (G6PD).[\[2103\]](#),[\[2104\]](#)
- Oral—Essential oils with significant levels of camphor and 1,8-cineole can be toxic when taken

orally. As few as 4 to 5 drops of high 1,8-cineole oils may be problematic in very sensitive individuals. Camphor can be toxic when taken orally (usually single doses exceeding 2 ml), although the lethal dose for humans is estimated to be (more than 5 ml) in a single dose.[\[2105\]](#),[\[2106\]](#),[\[2107\]](#),[\[2108\]](#),[\[2109\]](#),[\[2110\]](#),[\[2111\]](#),[\[2112\]](#),[\[2113\]](#)

- May interfere with pentobarbital and other barbiturates (medications for anxiety and insomnia) based on 1,8-cineole content.[\[2114\]](#),[\[2115\]](#)

SELECTED EVIDENCE:

- Spanish sage essential oil enhances cognitive performance in both healthy people and people with dementia or cognitive impairments according to a review of eight clinical studies.[\[2116\]](#),[\[2117\]](#) Another study found that speed of memory, secondary memory, alertness, and mood were all enhanced by the administration of about 1.5 drops of Spanish sage oil daily for seven days in young healthy individuals.[\[2118\]](#)
 - Oral administration of about 1.5 drops of Spanish sage in a capsule (one capsule daily week one, two capsules daily week two, three capsules daily week three) moderately improved memory and attention in people with Alzheimer's disease with good tolerability and no adverse effects directly attributable to the Spanish sage.[\[2119\]](#)
 - *In vitro* research discovered that Spanish sage protects neurons from oxidative stress-induced damage by preventing morphological changes associated with Alzheimer's disease (plaques, neurofibrillary tangles, etc.), protecting cell viability, improving glutathione to oxidized glutathione levels, and reducing the production of damaging reactive oxygen species.[\[2120\]](#)
 - The monoterpenes alpha-pinene and 1,8-cineole in Spanish sage balance the production of reactive oxygen species to reactive oxygen scavengers (cellular redox balance), which prevents injury to and death of astrocytes (glial cells of the central nervous system).[\[2121\]](#) Astrocytes degeneration or destruction is associated with dementia.
 - *In vitro* research suggests that Spanish sage oil and its major compounds inhibits acetylcholinesterase (AChE).[\[2122\]](#),[\[2123\]](#),[\[2124\]](#) Inhibition of AChE prevents the break-down of acetylcholine, which is essential for memory and thinking. People with neurodegenerative diseases make less acetylcholine, and the diseases often break it down at a faster rate leading to acetylcholine deficits.
 - Spanish sage possesses mild oestrogenic activity (a substance that can activate or inhibit endocrine system and estrogen activity).[\[2125\]](#)
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SPEARMINT

Mentha spicata, *Mentha viridis*, *Mentha crispa*, *Mentha cardiaca*

FAMILY: Lamiaceae (Labiatae)

NOTE: Top

AROMA INTENSITY: Medium

AROMA: Minty, warm, herbaceous

COMMON EXTRACTION METHOD: Steam distilled from the leaves

POSSIBLE SUBSTITUTE OILS: Peppermint

BLENDS WELL WITH: Basil, bergamot, cajeput, eucalyptus, ginger, grapefruit, lavender, lemon, lemongrass, marjoram, niaouli, orange, peppermint, petitgrain, pine, rosemary, tangerine, thyme

RECOMMENDED DILUTION RANGE: 3%–50%; neat for some conditions; Pulegone-Menthone-Isomenthone CT—1.5%–20%

PRIMARY COMPOUNDS: [\[2126\]](#), [\[2127\]](#), [\[2128\]](#), [\[2129\]](#), [\[2130\]](#), [\[2131\]](#), [\[2132\]](#), [\[2133\]](#), [\[2134\]](#), [\[2135\]](#), [\[2136\]](#), [\[2137\]](#)

*Mentha Spicata Carvone CT**

Carvone	48.6%–76.5%
Limonene	5.8%–25.2%
Menthone	0.9%–21.9%
Dihydro Carvone	0.0%–21.5%
Cis-Carveol	14.0%–21.3%
Trans-Carveol	0.2%–14.0%
Linalool	0.3%–11.3%
1,8-Cineole	1.0%–6.8%
Germacrene D	0.0%–4.7%

Mentha spicata Menthone CT

Menthone	44.5%
Neoisomenthyl Acetate	8.4%
Menthol	5.4%
1,8-Cineole	5.2%
Caryophyllene	2.9%
IsoMenthone	2.6%

Mentha spicata Piperitenone Oxide CT

Piperitenone Oxide	63.5%–70.3%
Germacrene D	4.2%–7.2%
1,8-Cineole	0.4%–3.5%
Piperitenone	1.0%–2.8%
Carhydranol	1.5%–2.0%
Beta-Pinene	0.4%–2.0%
Limonene	1.1%–1.8%
Delta-Cadinene	0.1%–1.6%

Mentha spicata Piperitone Oxide CT

Piperitone Oxide	54.2%–72.3%
Germacrene D	2.0%–7.5%
1,8-Cineole	0.4%–5.8%
Limonene	0.4%–4.8%
Piperitenone Oxide	0.1%–4.8%
Beta-Pinene	0.4%–2.0%
Carhydranol	0.2%–2.0%
Delta-Cadinene	0.1%–1.9%
Piperitone	0.1%–1.8%
Piperitenone	0.1%–1.3%

Mentha spicata Pulegone-Menthone-Isomenthone CT

Pulegone	26.7%–72.1%
Menthone	15.6%–31.4%
IsoMenthone	2.6%–31.4%
Piperitone	0.0%–28.2%
Octadecanol	0.0%–15.0%
Trans-Beta-Caryophyllene	0.0%–8.0%
1,8-Cineole	1.6%–7.8%
Germacrene D	0.0%–5.3%
Limonene	0.7%–5.2%
Phytene-2	0.0%–3.5%
Beta-Phellandrene	0.0%–3.0%
Caryophyllene Oxide	0.0%–3.0%
Sabinene Hydrate	0.0%–2.8%

Phytol 0.0%–2.5%

Mentha spicata Linalool CT

Linalool	65.2%–75.3%
Beta-Caryophyllene	4.4%–6.3%
Myrcene	4.7%–5.9%
1,8-Cineole	4.7%–4.9%
Germacrene D	1.9%–3.0%
Beta-Terpineol	1.0%–3.0%
Alpha-Terpineol	0.9%–3.0%

Mentha spicata var. viridis Cis-Ocimenone CT

Cis-Ocimenone	61.7%
Limonene	10.5%
Trans-Carveol	5.0%
Alpha-Selinene	1.7%
Neo-Isodihydrocarveol Acetate	1.5%
(Z)-Jasmone	1.3%
1,8-Cineole	1.2%

*The carvone CT is the most commonly reported in the literature.

OTHER COMPOUNDS: Sabinene, beta-pinene, beta-myrcene, para-cymene, gamma-terpinene, menthol, trans-dihydrocarvone, piperitone, trans-anethole, beta-bourbonene, beta-caryophyllene, germacrene A

REPORTED THERAPEUTIC PROPERTIES: Analgesic (pain relief), anesthetic, antibacterial, anti-inflammatory, antiseptic, **antispasmodic**, antifungal, anticonvulsive, antineuralgic, expels excess gas, **decongestant**, **aids digestion**, **relieves headache**, expectorant, diuretic, reduces fever, nervine (calms and soothes the nerves), supports and protects the liver, stimulating, energizing, reduces anxiety, stress management, **antidepressant**, combats fatigue

CAUTIONS:

- Avoid with epilepsy and Parkinson's disease due to carvone and pulegone content (pulegone-menthone-isomenthone CT). [\[2138\]](#)
- The menthol content in spearmint may negatively impact red blood cells and increase the risk of jaundice in children with Glucose-6-phosphate dehydrogenase deficiency (G6PD)—low risk. [\[2139\]](#), [\[2140\]](#)
- Avoid use in those with iron-deficiency and iron-deficiency anemia. Animal research suggests that spearmint may decrease iron absorption and therefore aggravate iron-deficiency symptoms and anemia. [\[2141\]](#)

SELECTED EVIDENCE:

- The oral administration of two drops each of peppermint and spearmint in a capsule every four

hours in conjunction with normal antiemetic medications significantly reduced the number and severity of nausea/vomiting associated with chemotherapy treatment when compared to antiemetic drugs alone.[\[2142\]](#) Another study concluded that inhalation of ginger, spearmint, peppermint, and cardamom (three deep inhalations) from a gauze pad following surgery reduced nausea and requirements for medications to reduce nausea and vomiting.[\[2143\]](#)

- Spearmint oil, or carvone, reduces intestinal spasms according to animal research.[\[2144\]](#) Interestingly, the researchers concluded that carvone was a 100 times more potent calcium channel blocker than verapamil (a drug calcium channel blocker used to treat high blood pressure, chest pain, and irregular heart rhythm. Agents that block calcium channels prevent calcium from entering heart and blood vessel cells, which results in relaxed blood vessels and greater supply of blood and oxygen to the heart.
 - *In vitro* research suggest that spearmint oil inhibits *C. albicans*, *A. flavus*, *A. parasiticus*, *A. ochraceus*, and *F. moniliforme*, and drug-resistant and -susceptible *H. pylori*, and *S. aureus*.[\[2145\]](#),[\[2146\]](#),[\[2147\]](#) Another study determined that spearmint oil is a stronger antifungal than bifonazole (an antifungal drug).[\[2148\]](#)
 - Spearmint oil prevents *S. mutans* from sticking together and forming plaque (biofilm) *in vitro*, possibly leading to the prevention of cavities.[\[2149\]](#)
 - Animal research concluded that spearmint oil significantly reduces lung injury and inflammation in rats with chronic obstructive pulmonary disease (COPD).[\[2150\]](#)
 - *In vitro* research suggests that spearmint oil increases the antibacterial effect of nitrofurantoin (an antibiotic used to treat bacterial urinary tract infections).[\[2151\]](#)
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SPIKE LAVENDER

Lavandula latifolia, *Lavandula spica*

FAMILY: Lamiaceae

NOTE: Middle

AROMA INTENSITY: Strong

AROMA: Spicy, medicinal, fresh, floral

COMMON EXTRACTION METHOD: Steam distilled from the flowers

POSSIBLE SUBSTITUTE OILS: Spanish sage, lavender, lavandin

BLENDS WELL WITH: Cedarwood, cinnamon, clary sage, clove, eucalyptus, lavender, patchouli, neroli, nutmeg, pine, rosemary, sage

RECOMMENDED DILUTION RANGE: 3%–50%; neat for some conditions

PRIMARY COMPOUNDS:[\[2152\]](#),[\[2153\]](#),[\[2154\]](#)

Linalool	27.2%–43.1%
1,8-Cineole	28.0%–34.9%
Camphor	10.8%–23.2%
Borneol	0.9%–10.1%
Beta-Pinene	0.8%–2.6%
(E)-Alpha-Bisabolene	0.2%–2.3%
Beta-Caryophyllene	0.5%–1.9%
Alpha-Terpineol	0.8%–1.6%
Trans-Caryophyllene Oxide	0.0%–1.6%

OTHER COMPOUNDS: Alpha-pinene, beta-myrcene, camphene, cis-beta-ocimene, d-limonene, sabinene, beta-farnesene, gamma-terpineol, caryophyllene oxide

REPORTED THERAPEUTIC PROPERTIES: Analgesic (pain relief), anti-inflammatory, antifungal, antimicrobial, **antiseptic**, antispasmodic, expels excess gas, relieves insect bites, promotes the flow of bile, diuretic, **expectorant**, nervine (calms and soothes the nerves), aids digestion, increases redness and circulation of a localized area, **relieves skin conditions**, increases sweating, **wound healing**, stimulating, antidepressant, combats shock, relieves anxiety, **stress management**

CAUTIONS:

- Avoid with children under age 3, particularly around the nose and mouth (1,8-cineole CT and camphor CT). Use very cautiously in children under age 5 due to high 1,8-cineole and camphor content. 1,8-cineole may cause seizures, central nervous system problems, or respiratory distress in young children.[\[2155\]](#),[\[2156\]](#),[\[2157\]](#) Several cases of camphor poisoning and/or seizures from ingestion and topical application have been reported in children.[\[2158\]](#),[\[2159\]](#) Ingestion of camphor-containing products has been lethal in children under age 2.[\[2160\]](#) Children 5 years and up may use camphor-containing essential oils topically in dilutions no stronger than 5%. 1,8-cineole may cause seizures, central nervous system problems, or respiratory distress in young children.[\[2161\]](#),[\[2162\]](#),[\[2163\]](#)
- Caution is warranted during pregnancy and while lactating due to potentially high camphor content. Ingestion of essential oils with significant levels of camphor may lead to abortion because fetuses lack the enzymes to process it.[\[2164\]](#) Camphor ingestion by infants and young children may cause cough, vomiting, seizure, burning sensation in the mucous membranes and eyes, or lack of voluntary coordination of muscle movements.[\[2165\]](#)
- Caution is warranted orally due to the significant amounts of 1,8-cineole and camphor content.

Limit it to small doses internally (adults—maximum 10 drops daily). Toxicity has been reported when eucalyptus (also high in 1,8-cineole) was ingested in large doses, and as few as 4 to 5 drops may cause problems in very sensitive individuals.[\[2166\]](#),[\[2167\]](#),[\[2168\]](#),[\[2169\]](#),[\[2170\]](#),[\[2171\]](#) Essential oils that contain significant amounts of camphor can be toxic when taken orally (usually single doses exceeding 2 ml), although the lethal dose for humans is estimated to be more than 5 ml in a single dose.[\[2172\]](#),[\[2173\]](#),[\[2174\]](#)

- Avoid with epilepsy and Parkinson’s disease due to 1,8-cineole and camphor content. May exacerbate or cause seizures or convulsions based on 1,8-cineole content.[\[2175\]](#),[\[2176\]](#),[\[2176a\]](#)
- The camphor content in spike lavender may negatively impact red blood cells and increase the risk of jaundice in children with Glucose-6-phosphate dehydrogenase deficiency (G6PD).[\[2177\]](#),[\[2178\]](#)
- May interfere with pentobarbital and other barbiturates (medications for anxiety and insomnia) based on 1,8-cineole content.[\[2179\]](#),[\[2180\]](#)
- Avoid with those who have a compromised liver due to the risk of increased liver enzymes and liver damage.[\[2181\]](#)

SELECTED EVIDENCE:

- Spike lavender inhibits the growth of *S. aureus* and MRSA *in vitro*.[\[2182\]](#)
- *In vitro* research concluded that spike lavender inhibits several foodborne pathogens (*S. Enteritidis*, *S. Typhimurium*, *E. coli*, *Y. enterocolitica*, *S. flexneri*, *L. monocytogenes serovar*, and *S. aureus*).[\[2183\]](#)
- Spike lavender is a useful expectorant.[\[2184\]](#)



SPIKENARD

Nardostachys grandiflora, *Nardostachys jatamansi*

FAMILY: Valerianaceae

NOTE: Base

AROMA INTENSITY: Strong

AROMA: Woody, spicy, musty

COMMON EXTRACTION METHOD: Steam distilled from the roots

POSSIBLE SUBSTITUTE OILS: Patchouli, vetiver

BLENDS WELL WITH: Cistus, clary sage, clove, cypress, frankincense, geranium, juniper, lavender, myrrh, neroli, orange, palmarosa, patchouli, petitgrain, pine, rose, sage, vetiver

RECOMMENDED DILUTION RANGE: 5%–Neat

PRIMARY COMPOUNDS: [\[2185\]](#), [\[2186\]](#), [\[2187\]](#), [\[2188\]](#), [\[2189\]](#), [\[2190\]](#)

Calarene CT

Calarene (Beta-Gurjunene) 25.9%–35.4%

Aristolone 6.3%–15.6%

Patchoulol 0.0%–10.6%

Beta-Maaliene 5.6%–10.2%

Valeranone (Jatamansone) 3.7%–9.7%

Alpha-Gurjunene 0.1%–9.1%

Valerena-4,7-Diene 0.0%–6.6%

Spathulenol 0.0%–4.3%

Ledene Oxide CT (Pakistani)

Ledene Oxide 13.0%

Patchoulol 9.6%

Spathulenol 2.7%

Globulol 1.9%

Nardol CT (Indian)

Nardol 10.1%

Formic Acid 9.4%

Alpha-Selinene 9.2%

Dihydro-Beta-Ionene 7.9%

Valeranone CT (Indian)

Valeranone (Jatamansone) 36.7%

Epi-Alpha-Cadinol 22.7%

Alpha-Eudesmol 3.0%

OTHER COMPOUNDS: Isovaleric acid, 3-methylvaleric acid, alpha-pinene, camphene, beta-pinene, 1,8-cineole, gamma-terpinene, linalool, 4-terpineol, alpha-terpineol, beta-patchoulene, beta-gurjunene, beta-maaliene, aristolone, aromadendrene, beta-ionone, alpha-selinene, alpha-bulnesene, alloaromadendrene, delta-cadinene, alpha-panasinsen, spathulenol, viridiflorol, aristolone, 3,7-guaiadiene, alpha-bulnesene, beta-elemene, cis-4,5-muroladiene, epi-alpha-selinene, seychellene, daucol, spirojatamol isomer, valeranal MW=218

REPORTED THERAPEUTIC PROPERTIES: Antibacterial, antifungal, anti-infectious, antispasmodic, anti-inflammatory, antiseptic, **antiallergenic**, relieves constipation, promotes cellular regeneration, **relieves headache (migraine)**, stimulates production of female hormones, **balances heart function**, promotes lymph circulation, aids circulation, **wound healing**, **sedating**, encourages calm and peace, stress management, **relieves anxiety**

CAUTIONS:

- None currently known.

SELECTED EVIDENCE:

- *In vitro* research concluded that spikenard oil (root and rhizome) protected heart muscle cells from oxidative stress and death, which is a major cause of heart disorders.[\[2191\]](#)
- Spikenard oil prevents the growth of *A. flavus*, *A. fumigatus*, *A. sulphureus*, *M. fragilis*, *R. stolonifer*, *A. niger*, and *F. oxysporum in vitro*.[\[2192\]](#),[\[2193\]](#)



SPRUCE (Black)

Picea mariana

FAMILY: Pinaceae

NOTE: Top-Middle

AROMA INTENSITY: Medium

AROMA: Woody, earthy, evergreen

COMMON EXTRACTION METHOD: Steam distilled from the needles

POSSIBLE SUBSTITUTE OILS: Blue spruce, tsuga, silver fir, rosemary (bornyl acetate CT), balsam fir, white fir, pine

BLENDS WELL WITH: Birch, blue spruce, cedarwood, eucalyptus, frankincense, galbanum, helichrysum, lavender, palo santo, pine, rosemary, silver fir, white fir, wintergreen

RECOMMENDED DILUTION RANGE: 5%–50%; neat for some conditions

PRIMARY COMPOUNDS: [\[2194\]](#), [\[2195\]](#), [\[2196\]](#), [\[2197\]](#), [\[2198\]](#)

Bornyl acetate 21.6%–52.0%

Camphene 14.0%–22.0%

Alpha-pinene 7.4%–16.6%

Borneol 0.0%–7.8%

Limonene 2.6%–5.5%

Tricyclene 0.0%–4.6%

OTHER COMPOUNDS: Beta-myrcene, beta-pinene, fenchyl acetate, beta-elemene, caryophyllene, beta-phellandrene, isobornyl acetate, camphor, delta-cadinene, alpha-amorphene, germacrene D, 1,3-cyclohexadiene, longifolene, santene, myrcene

REPORTED THERAPEUTIC PROPERTIES: Analgesic (pain relief), antimicrobial, antiseptic, eases cough, anti-inflammatory, antispasmodic, astringent, diuretic, expectorant, **nervine (calms and soothes the nerves)**, stimulates thyroid function, **supports adrenal gland function**, increases redness and circulation of a localized area, warming, **relieves exhaustion**, grounding, calming, reduces mood swings, encourages self-confidence, self-acceptance, and forgiveness, **relieves anxiety**, stress management, promotes a sense of security

CAUTIONS:

- None currently known.

SELECTED EVIDENCE:

- Black spruce oil inhibits MRSA *in vitro*. [\[2199\]](#)
 - Inhalation of bornyl acetate, the main compound in black spruce, for 40 minutes influenced autonomic nervous system activity and provided a calming effect in healthy males without influencing task performance. [\[2200\]](#) This study suggests that black spruce may be beneficial for those who are anxious while performing tasks.
-



TANGERINE (Mandarin)

Citrus reticulata

FAMILY: Rutaceae

NOTE: Top

AROMA INTENSITY: Medium

AROMA: Fresh, citrusy, sweet, fruity, orange-like

COMMON EXTRACTION METHOD: Cold-pressed/expressed or hydrodistilled from the fruit peel (rind)

POSSIBLE SUBSTITUTE OILS: Orange, lemon, grapefruit, lime, bergamot

BLENDS WELL WITH: Basil, bergamot, cardamom, carrot seed, cassia, chamomile (German, Roman), cinnamon, clary sage, clove, coriander, frankincense, grapefruit, juniper, lavender, lemon, lemon verbena, lime, nutmeg, neroli, niaouli, orange, patchouli, petitgrain, rose, sage, sandalwood, Spanish sage, ylang ylang

RECOMMENDED DILUTION RANGE: 3%–50%; neat for some conditions

PRIMARY COMPOUNDS: [\[2201\]](#), [\[2202\]](#), [\[2203\]](#), [\[2204\]](#), [\[2205\]](#), [\[2206\]](#)

Cold-pressed/expressed

Limonene 87.1%–94.7%

Gamma-Terpinene 0.1%–5.4%

Myrcene 0.7%–2.2%

Distilled

Limonene 45.7%–92.4%

Geranial 0.1%–19.0%

Neral 0.1%–14.5%

Octanol 0.0%–6.9%

Alpha-Myrcene 0.0%–4.2%

Geranyl Acetate	0.0%–3.9%
Geraniol	0.0%–3.5%

OTHER COMPOUNDS: *Cold-pressed/expressed*—Linalool, alpha-pinene, (E)-beta-ocimene; *Distilled*—Linalool, alpha-pinene, beta-myrcene, (E)-beta-ocimene, gamma-terpinene

REPORTED THERAPEUTIC PROPERTIES: Antimicrobial, antiseptic, **antispasmodic**, anti-inflammatory, expels excess gas, aids digestion, diuretic, relieves constipation, regenerative, **reduces the appearance of blemishes**, stimulates healthy cell cycle, promotes fluid balance and removes excess fluids from the body, purifies the blood, **encourages restful sleep**, stimulating, **stress management**, **antidepressant**, **relieves anxiety**

CAUTIONS:

- Tangerine is considered nonphotosensitizing according to the available research.[\[2207\]](#) However, the International Fragrance Association (IFRA) considers tangerine a possible mild photosensitizer.[\[2208\]](#) Based on IFRA's determination, it may be best to avoid UV exposure for twelve hours following application of tangerine.

SELECTED EVIDENCE:

- Tangerine oil helps decrease inflammation by strongly inhibiting the 5-lipoxygenase (5-LOX) enzyme that is involved in the inflammation response according to *in vitro* research.[\[2209\]](#)
- Tangerine oil completely prevents the production of aflatoxin B(1) by *A. flavus in vitro*.[\[2210\]](#)
- *In vitro* research suggests that tangerine oil kills mosquito larvae and is a potential natural option to control mosquito-borne disease.[\[2211\]](#)



THYME

Thymus vulgaris, *Thymus zygis*

FAMILY: Lamiaceae (Labiatae)

NOTE: Top-Middle

AROMA INTENSITY: Strong

AROMA: Fresh, herbaceous, medicinal

COMMON EXTRACTION METHOD: Steam distilled from the flowers and leaves

POSSIBLE SUBSTITUTE OILS: Oregano, niaouli, geranium, marjoram, palmarosa

BLENDS WELL WITH: Bay laurel, bergamot, camphor, clary sage, copaiba, cypress, eucalyptus, geranium, grapefruit, lavender, lemon, juniper, melaleuca (tea tree), marjoram, orange, oregano, petitgrain, pine, ravensara, rose, rosemary, sage, Spanish sage

RECOMMENDED DILUTION RANGE: 1.5%–20%; 50% for some conditions

PRIMARY COMPOUNDS: [\[2212\]](#), [\[2213\]](#)

Alpha-Terpineol CT

Alpha-Terpineol	40.9%–90.4%
Thymol	0.0%–27.4%
Linalool	0.4%–19.2%
Thuyanol-4	0.0%–13.9%
1,8-Cineole	0.1%–13.2%
Terpinen-4-ol	0.0%–6.2%
Gamma-Terpinene	0.0%–3.3%
Carvacrol	0.0%–3.0%

Carvacrol CT

Carvacrol	21.5%–84.1%
Para-Cymene	0.0%–34.6%
Linalool	1.1%–29.9%
Thymol	0.0%–27.2%
Gamma-Terpinene	0.0%–26.8%
Thuyanol-4	0.0%–12.2%
Beta-Caryophyllene	0.0%–10.3%
Geraniol	0.0%–10.3%
Alpha-Terpineol	0.0%–8.2%
Terpinen-4-ol	0.0%–7.1%
1,8-Cineole	0.0%–3.1%

Geraniol CT

Geraniol	23.5%–72.7%
Linalool	0.4%–40.8%
Beta-Caryophyllene	0.3%–9.6%
Thymol	0.0%–7.9%
Carvacrol	0.0%–6.9%

Gamma-Terpinene 0.0%–5.3%

Linalool CT

Linalool 32.2%–93.8%

Geraniol 0.0%–30.0%

Thymol 0.0%–23.6%

Thuyanol-4 0.0%–20.6%

Alpha-Terpineol 0.0%–14.2%

Beta-Caryophyllene 0.5%–12.3%

1,8-Cineole 0.0%–10.7%

Terpinen-4-ol 0.0%–8.5%

Myrcenol-8 0.0%–7.1%

Carvacrol 0.0%–6.8%

Thuyanol-4 CT

Thuyanol-4 1.6%–52.2%

Linalool 2.4%–32.5%

Terpinen-4-ol 2.2%–29.6%

Carvacrol 0.0%–21.4%

1,8-Cineole 0.0%–21.2%

Beta-Caryophyllene 0.8%–20.3%

Myrcenol-8 0.0%–18.7%

Alpha-Terpineol 2.0%–13.9%

Thymol 0.0%–9.3%

Gamma-Terpinene 0.0%–5.0%

Para-Cymene 0.0%–5.0%

Thymol CT

Thymol 21.4%–72.9%

Para-Cymene 0.0%–29.0%

Carvacrol 0.8%–26.8%

Gamma-Terpinene 0.0%–23.5%

Linalool 1.1%–13.4%

Geraniol 0.0%–8.9%

Beta-Caryophyllene 0.0%–7.8%

Alpha-Terpineol 0.0%–6.1%

Terpinen-4-ol 0.0%–5.0%

1,8-Cineole 0.0%–3.8%

Thuyanol-4 0.0%–3.3%

OTHER COMPOUNDS: *Alpha-Terpineol CT*— Para-cymene, thymol, myrcenol-8, beta-caryophyllene; *Carvacrol CT*—N/A; *Geraniol CT*—Alpha-terpineol, para-cymene; *Linalool CT*—Gamma-terpinene, para-cymene; *Thuyanol-4 CT*—NA; *Thymol CT*—N/A

REPORTED THERAPEUTIC PROPERTIES: Analgesic (pain relief), antiparasitic, **antibacterial**, antifungal, antiviral, anti-inflammatory, **antiarthritic**, anesthetic, antimicrobial, antirheumatic, **antiseptic**, supports cardiac function, antitumor, antioxidant, antispasmodic, **antiviral**, expels excess gas, supports healthy cell division, **encourages normal bone turnover (remodeling)**, diuretic, **reduces the appearance of scars and blemishes**, **eases chronic and deep-set cough**, relieves sports injuries, **reduces hair loss**, expectorant, **wound healing**, increases redness and circulation of a localized area, **reduces headache**, stimulating, antidepressant, boosts memory and concentration, promotes self-confidence and self-assurance, combats despondency, **relieves fatigue**, diminishes guilt

CAUTIONS:

- Oral caution. Some thyme chemotypes contain up to 72.9% thymol. Thymol has a longer half-life (the time it takes for half of the medication to metabolize or excrete half of the dosage) than most essential oil compounds and should not be administered orally for long periods of time.[\[2214\]](#) Thymol is a monoterpene phenol. Reports of fatalities in children who consumed 50 to 200 mg of phenols has been reported.[\[2215\]](#) It is recommended that chemotypes with high levels of thymol be limited to 10 drops per day orally for adults with a two- to seven-day break after twenty-one days of use.
- Avoid with epilepsy or Parkinson's disease due to 1,8-cineole content (alpha-terpineol, linalool, and thuyanol CTs). May exacerbate or cause seizures or convulsions based on 1,8-cineole content.[\[2216\]](#),[\[2217\]](#),[\[2217a\]](#)
- May interact with aspirin, blood-pressure, antiplatelet, and anticoagulant medications, and increase the risk of bleeding among people with bleeding disorders.[\[2218\]](#),[\[2219\]](#),[\[2220\]](#)
- May interfere with enzymes that metabolize medications (NSAIDs, proton-pump inhibitors, acetaminophen, antiepileptics, immune modulators, blood-sugar medications, blood-pressure medications, antidepressants, antipsychotics, diabetic medications, antihistamines, antibiotics, and anesthetics).[\[2221\]](#),[\[2222\]](#),[\[2223\]](#)
- May interact with anticholinergic (drugs used for asthma, incontinence, gastrointestinal cramps, muscular spasms, depression, and sleep disorders) and chlorogenic medications (drugs used to reduce urinary retention, diagnose myasthenia gravis, and for glaucoma) based on thymol and carvacrol content.[\[2224\]](#)
- May interact with antibiotics and possibly enhance their effects.[\[2225\]](#),[\[2226\]](#),[\[2227\]](#),[\[2228\]](#),[\[2229\]](#)
- May irritate mucous membranes (eyes, mouth, nasal passages, vagina, rectum).
- Dilution recommended for topical application with the geraniol, linalool, and carvacrol chemotypes. Geraniol is metabolized via the CYP450 pathway into metabolites such as geranial and neral and may cause sensitization and irritation when applied topically.[\[2230\]](#)

SELECTED EVIDENCE:

- *In vitro* research suggests that thyme essential oil is highly toxic to breast, prostate, oral, and lung cancer cells.[\[2231\]](#),[\[2232\]](#),[\[2233\]](#) Another study concluded that carvacrol from thyme oil prevents tumor formation and triggers apoptosis of liver cancer cells through the mitochondrial pathway.[\[2234\]](#) Thymol causes cell death among cells that are responsible for causing glioblastomas (tumors that arise from astrocyte cells that make up the connective tissue of the

brain).[\[2235\]](#)

- Thyme potently inhibits several common pathogenic organisms (*S. pyogenes*, *S. agalactiae*, *S. pneumoniae* and *K. pneumoniae*, *H. influenzae*, *S. aureus*, and *S. maltophilia*) that cause respiratory tract infections.[\[2236\]](#)[\[2237\]](#) Another study found that thyme oil inhibited 120 drug-resistant bacterial strains from people with oral, abdominal cavity, respiratory, skin, and genitourinary infections from hospitals.[\[2238\]](#)
- *In vitro* research concluded that thyme oil inhibits MRSA and *E. coli*.[\[2239\]](#)[\[2240\]](#)
- Thyme oil prevents oxidation of LDL cholesterol *in vitro*.[\[2241\]](#) Higher oxidized LDL levels are associated with a significantly increased risk of heart disease.[\[2242\]](#)
- *In vitro* research suggests that thyme is a strong inhibitor of the bacterium *P. acnes*, which is suspected of being the major bacterium that causes acne.[\[2243\]](#)
- Oral administration of 25 drops of a 2% thyme oil solution every six hours for two consecutive menstrual cycles significantly reduced the pain and severity of painful menstruation (dysmenorrhea) in young women.[\[2244\]](#)
- A foot bath (107°F water) with salts and either oregano, thyme, cinnamon bark, lemongrass, clove, palmarosa, peppermint, lavender, or geranium significantly reduced fungi associated with athlete's foot *in vitro*.[\[2245\]](#)
- Researchers concluded that thyme oil inhibited several *Candida* species and bacterium known to cause hospital-acquired infections according to *in vitro* research.[\[2246\]](#) Thyme also inhibited drug-resistant *C. albicans* and enhances the effect of antifungal drugs.[\[2247\]](#)[\[2248\]](#)[\[2249\]](#)
- *In vitro* research discovered that thyme oil prevents HSV-2 infection of healthy cells at an effective rate greater than 90%.[\[2250\]](#) Another study determined that thyme oil possesses high levels of virucidal activity against both drug-resistant and non-drug-resistant HSV-1.[\[2251\]](#)
- A daily scalp massage with thyme, rosemary, lavender, and cedarwood oils in a mixture of carrier oils (jojoba and grapeseed) improved alopecia areata (round patches of hair loss) in 44% of study participants.[\[2252\]](#)
- Animal research suggests that thyme oil may protect against osteoporosis by inhibiting osteoclast (cells that breakdown bone tissue to release minerals into the circulatory system) activity and normalizing bone turnover.[\[2253\]](#)
- The vapor of thyme oil inhibited both penicillin-susceptible and penicillin-resistant respiratory pathogens (*H. influenzae*, *S. pneumoniae*, *S. pyogenes*, and *S. aureus*) *in vitro*.[\[2254\]](#)
- A case report describes the use of a combination of the essential oils of lemongrass, eucalyptus, melaleuca (tea tree), clove, thyme and BHT, triclosan, and undenatured alcohol to treat a chronic infection of the lower tibia (osteomyelitis) that was not responding to several courses of IV antibiotics. Amputation of the lower leg was being considered when a physician recommended the leg be opened up and the combination inserted directly into the bone (through a drilled hole, 1 ml per day for forty-eight hours). At three months, the wound and bone healed, and symptoms were resolved.[\[2255\]](#)
- *In vitro* research concluded that thyme oil possesses strong antioxidant properties.[\[2256\]](#)
- *In vitro* research suggests that thyme oil inhibits *T. cruzi*.[\[2257\]](#) *T. cruzi* causes the potentially life-threatening illness Chagas disease, also known as American trypanosomiasis.
- A combination of clove and thyme oil prevents the degradation of lipids in the skin caused by UV exposure and oxidative damage.[\[2258\]](#)
- Thyme oil prevents the production growth of *A. flavus* and its subsequent production of aflatoxin.[\[2259\]](#) Another study concluded that thyme oil prevents the growth of *T. rubrum* and

Aspergillus species.[\[2260\]](#)

- Animal research found that oral administration of thyme oil (250 to 500 mg/kg) prevented liver damage caused by acetaminophen comparable to the herbal remedy silymarin.[\[2261\]](#)
 - Both oral and topical administration of thyme oil and/or carvacrol (alpha-terpineol CT) reduced inflammation, edema (swelling caused by excess fluid trapped in body tissues), and leukocyte migration (the movement of leukocytes from the blood to tissues, which causes increased inflammation) in rats.[\[2262\]](#) Another study concluded that thyme inhibits a number of pro-inflammatory molecules.[\[2263\]](#)
 - *In vitro* research suggests that thyme oil inhibits *R. oryzae* (a fungi that causes mucormycosis, which is an infection characterized by sinus infection, sinus pain, fever, headache, and lung infection).[\[2264\]](#)
 - Thyme oil inhibits multi-drug-resistant clinical strains of *E. coli in vitro*.[\[2265\]](#)[\[2266\]](#)
 - *In vitro* research suggests thyme oil inhibits *Entamoeba histolytica* (an anaerobic parasitic protozoan that may cause intestinal disorders, and bloodstream, liver, brain, and lung infections).[\[2267\]](#)
 - Animal research suggests that the topical application of a 1% thyme oil solution cures dermatomycoses (a fungal skin disease that causes scaling and redness) in rats.[\[2268\]](#)
 - Both carvacrol and thymol inhibit acetylcholinesterase (AChE). Inhibition of AChE prevents the breakdown of acetylcholine, which is essential for memory and thinking. People with neurodegenerative diseases make less acetylcholine, and the diseases often break it down at a faster rate leading to acetylcholine deficits.[\[2269\]](#)
 - *In vitro* research concluded that thyme oil inhibits nitric oxide (NO) production and scavenges NO, which reduces inflammation.[\[2270\]](#)
 - Thyme oil inhibits the growth of the protozoan *G. lamblia*, which colonizes the small intestine and causes giardia (an intestinal infection characterized by abdominal cramps, bloating, nausea, and diarrhea).[\[2271\]](#)[\[2272\]](#)
 - Thymol balances mast cell production with cell death, which may make it beneficial for skin inflammation.[\[2273\]](#)
 - Alpha-terpineol prevents the growth of tumor cells by inhibiting NF-kappaB (a protein that helps regulates a variety of cellular and organism processes including inflammation, immune activity, developmental factors, cellular growth, and apoptosis).[\[2274\]](#)
-



TSUGA (Eastern Hemlock, Hemlock Spruce)

Tsuga canadensis, Pinus canadensis

FAMILY: Pinaceae

NOTE: Top-Middle

AROMA INTENSITY: Medium

AROMA: Woody, balsamic, slightly fruity

COMMON EXTRACTION METHOD: Steam distilled from the needles and twigs

POSSIBLE SUBSTITUTE OILS: Blue spruce, spruce (black), silver fir, rosemary (bornyl acetate CT), balsam fir, white fir, pine

BLENDS WELL WITH: Balsam fir, blue spruce, cedarwood, clary sage, lavender, pine, rosemary, sandalwood, spruce (black), silver fir, white fir

RECOMMENDED DILUTION RANGE: 3%–33%; neat for some conditions

PRIMARY COMPOUNDS: [\[2275\]](#), [\[2276\]](#)

Bornyl Acetate	26.8%–39.6%
Alpha-pinene	16.4%–23.7%
Camphene	11.9%–14.5%
Limonene	3.4%–6.2%
Tricyclene	0.0%–6.2%
Beta-Phellandrene	0.0%–4.4%

OTHER COMPOUNDS: Beta-pinene, alpha-phellandrene, beta-myrcene, alpha-terpinolene, para-cymene, beta-caryophyllene, alpha-humulene, alpha-terpineol, terpinen-4-ol, camphor, cycloheptane, piperitone, 1,3-cyclopentadiene, 2-cyclohexene-1-one, 1,3-benzenediamine, borneol

REPORTED THERAPEUTIC PROPERTIES: Analgesic (pain relief), **anti-inflammatory**, anti-infectious, antimicrobial, antiseptic, antioxidant, astringent, diuretic, expectorant, removes excess mucous, **aids**

endocrine system function, nervine (calms and soothes the nerves), increases redness and circulation of a localized area, aids circulation, **supports normal respiration, eases cough**, antifungal, grounding, uplifting, encourages a sense of calm, helps remove emotional blocks

CAUTIONS:

- None currently known.

SELECTED EVIDENCE:

- Tsuga oil kills bladder cancer cells *in vitro*.[\[2277\]](#)
-



TURMERIC (Curcuma oil, Indian Saffron)

Curcuma longa

FAMILY: Zingiberaceae

NOTE: Base

AROMA INTENSITY: Medium

AROMA: Earthy, warm, slightly spicy and woody

COMMON EXTRACTION METHOD: Steam distilled from the rhizomes or leaves; also solvent extracted from the rhizomes

POSSIBLE SUBSTITUTE OILS: Ginger, sandalwood

BLENDS WELL WITH: Cistus, clary sage, clove, cinnamon, ginger, helichrysum, juniper, lavender, nutmeg, ylang ylang

RECOMMENDED DILUTION RANGE: 5%–50%; neat for some conditions

PRIMARY COMPOUNDS:[\[2278\]](#),[\[2279\]](#),[\[2280\]](#),[\[2281\]](#),[\[2282\]](#),[\[2283\]](#),[\[2284\]](#)

Leaves

Alpha-Phellandrene	8.0%–57.8%
Alpha-Terpinolene	11.5%–26.4%
Para-Cymene	4.8%–11.1%
1,8-Cineole	0.0%–10.5%

Beta-Pinene	0.1%–4.7%
Limonene	0.0%–4.6%

Rhizome (Distilled)

ar-Turmerone	5.4%–61.8%
Alpha-Turmerone	0.0%–44.1%
Beta-Turmerone (Curlone)	10.6%–18.5%
Alpha-Phellandrene	0.5%–9.4%
Alpha-Santalene	0.8%–6.6%
ar-Curcumene	0.5%–6.6%
Beta-Sesquiphellandrene	0.0%–5.6%
2-Carene	0.0%–4.8%
Zingiberene	0.0%–4.4%

Rhizome (Solvent Extracted)

ar-Turmerone	5.4%–33.2%
Alpha-Turmerone	6.5%–53.4%
Beta-Turmerone (Curlone)	18.1%–22.7%
3,5-Ditert-Butyl Phenol	0.0%–5.4%

*The rhizome oil is more commonly used in aromatherapy.

OTHER COMPOUNDS: *Leaves*—Terpinen-4-ol, 2-octanol, alpha-pinene, gamma-terpinene, delta-3-carene, undecanol, alpha-terpinene, linalool, neral, ar-turmerone; *Rhizome (Distilled)*—Alpha-bisabolene, beta-bisabolene, trans-ocimene, 1,8-cineole, antioxidant, benzene, 1-ethyl-4-isobutylbenzene, benzaldehyde, silane, 1,2,3,4,-tetramethyl-benzene, phenol, 2-octanol, delta-3-carene, terpinolene, viridiflorol, t-cadinol, (E)-alpha-atlantone, heptyl salicylate, humulene epoxide II; *Rhizome (Solvent Extracted)*—Alpha-pinene, vinyl propionate, para-cymene, 1,8-cineole, gamma-curcumene, ar-curcumene, zingiberene, beta-sesquiphellandrene, ar-turmerol, alpha-cadinol, bisabolene, (E)-alpha-atlantone

REPORTED THERAPEUTIC PROPERTIES: Antimicrobial, antibacterial, antimicrobial, antifungal, antiparasitic, antiviral, **antioxidant**, antiseptic, antispasmodic, relieves insect and snake bites, **anticancer**, antiarthritic, antitumor, **analgesic (pain relief)**, **anti-inflammatory**, **antirheumatic**, diuretic, **nervine (calms and soothes the nerves)**, **regenerates brain neurons**, supports liver function, nourishes and protects the skin, weight management, expels excess gas, **aids digestion**, eases cough, warming, **aids cognition**, relieves anxiety, promotes stability, stress management, improves mental clarity

CAUTIONS:

- May interact with aspirin, blood-pressure, antiplatelet, and anticoagulant medications, and increase the risk of bleeding among people with bleeding disorders based on ar-turmerone content.[\[2285\]](#)
- May interact with diabetes medications and cause low blood-sugar levels.[\[2286\]](#),[\[2287\]](#)

- May interfere with enzymes that metabolize medications (NSAIDs, proton-pump inhibitors, acetaminophen, antiepileptics, immune modulators, blood-sugar medications, blood-pressure medications, antidepressants, antipsychotics, diabetic medications, antihistamines, antibiotics, and anesthetics).[\[2288\]](#)

SELECTED EVIDENCE:

- A study determined that a combination of citronella, turmeric, kaffir lime (*C. hystrix*), hairy basil (*O. americanum*), and vanilla could replace DEET (a common chemical insect repellent that is associated with brain cell damage and behavioral changes in animals) as a natural insect repellent.[\[2289\]](#)
- Turmeric oil significantly reduces stomach ulcers (up to 84.7%) caused by ethanol in rats.[\[2290\]](#)
- *In vitro* research concluded that turmeric oil inhibits alpha-glucosidase and alpha-amylase activity more effectively than acarbose (a drug used to control blood-sugar levels and treat diabetes).[\[2291\]](#) Inhibition of these enzymes is valuable in the treatment of diabetes because it slows the digestion of starches and therefore reduces blood-sugar spikes following the consumption of carbohydrates. Another study concluded that turmeric oil or oleoresin modulated gene expression related to glycolysis (cellular production of energy from glucose), which led to better glucose and lipid metabolism in mice.[\[2292\]](#)
- Oral administration of turmeric oil was mildly joint protective and antiarthritic when administered to rats.[\[2293\]](#)
- Animal research suggests that oral administration of 250 to 500 mg/kg of turmeric oil protects neurons and the brain from damage caused during a stroke.[\[2294\]](#)[\[2295\]](#)[\[2296\]](#)
- Turmeric oil helps decrease inflammation by strongly inhibiting the 5-lipoxygenase (5-LOX) enzyme that is involved in the inflammation response according to *in vitro* research.[\[2297\]](#) An animal study found that when turmeric oil was administered orally, with or without fish oil, it provided equivalent or better anti-inflammatory activity than aspirin.[\[2298\]](#) Interestingly, turmeric oil relieved pain better alone, as opposed to with fish oil.
- A 0.5% turmeric oil solution completely inhibited the growth of *A. flavus* (a fungus that produces aflatoxin), and prevented aflatoxin production by the fungus by more than 96%.[\[2299\]](#)[\[2300\]](#)
- Oral administration of 300 mg/kg of turmeric oil reduced high cholesterol as effectively as the drug Ezetimibe (a drug used to lower cholesterol) by modulating genes (PPARα and LXRA) involved in lipid metabolism and transport in hamsters.[\[2301\]](#) Interestingly, the researchers also noted that turmeric oil reduced oxidative stress, platelet activation, and blood-vessel dysfunction.
- Turmeric oil prevents *S. mutans* from sticking together and forming plaque (biofilm) *in vitro*, possibly leading to the prevention cavities.[\[2302\]](#)
- A cream containing 6% turmeric oil inhibited the growth of dermatophytes (fungi that require keratin for growth and typically affect the skin, hair, and nails) on the skin.[\[2303\]](#)
- Clinical research suggests that 600 mg of turmeric oil mixed with 3 g of turmeric herb protected and reversed DNA damage and prevented cancer caused by oral submucous fibrosis (a precancerous condition of the oral mucosa that causes the formation of excess connective tissue of the oral mucosa, recurrent ulceration, ear pain and deafness, and decreased mouth opening).[\[2304\]](#)
- Turmerones prevent the growth of cancer cells *in vitro*.[\[2305\]](#)[\[2306\]](#)[\[2307\]](#) Research concluded that

turmerones prevent migration and trigger apoptosis in breast cancer cells, leukemia cells, and liver cancer cells, and stimulate the production of normal blood lymphocytes.[\[2308\]](#),[\[2309\]](#),[\[2310\]](#),[\[2311\]](#),[\[2312\]](#)

- o Research suggests that ar-turmerone may slow or reverse neurodegenerative disorders like dementia, Alzheimer's disease, Parkinson's disease, and Huntington's disease. Researchers discovered that ar-turmerone significantly increased the production of neural stem cells (brain stem cells that are essential for the repair and recovery of brain function) *in vitro* and in rats.[\[2313\]](#) Another *in vitro* study found that ar-turmerone inhibited pathways involved in inflammation and protected hippocampal cells from toxicity.[\[2314\]](#)



VETIVER (Khus)

Vetiveria zizanioides, *Anatherum zizanioides*, *Chrysopogon zizanioides*, *Phalaris zizanioides*

FAMILY: Poaceae (Gramineae)

NOTE: Base

AROMA INTENSITY: Strong

AROMA: Earthy, balsamic, slightly sweet and spicy

COMMON EXTRACTION METHOD: Steam distilled from the roots

POSSIBLE SUBSTITUTE OILS: Patchouli, spikenard, geranium

BLENDS WELL WITH: Bergamot, cardamom, clary sage, coriander, frankincense, geranium, ginger, grapefruit, lavender, lemon, lemon verbena, lemongrass, lime, orange, oregano, palo santo, patchouli, rose, sandalwood, spikenard, tangerine, ylang ylang

RECOMMENDED DILUTION RANGE: 5%–50%; neat for some conditions

PRIMARY COMPOUNDS:[\[2315\]](#),[\[2316\]](#),[\[2317\]](#),[\[2318\]](#),[\[2319\]](#),[\[2320\]](#),[\[2321\]](#)

Khusimol (Zizanol) 3.4%–24.6%

(E)-Isovalencenol	0.0%–15.6%
Calarene (Beta-Gurjunene)	0.5%–9.9%
Beta-Vetivenene	0.0%–9.8%
Dehydro-Aromadendrene	0.0%–7.3%
Alpha-Vetivone	2.0%–6.3%
Cycloisolongifolene	0.0%–5.9%
Vetiselinol	0.0%–5.6%
Beta-Bisabolol	0.0%–4.7%
Alpha-Longipinene	0.0%–4.2%
Nootkatone	0.0%–4.1%
Gamma-Selinene	0.0%–4.1%
Delta-Cadinene	0.0%–4.0%
Valerenol	0.0%–3.9%

OTHER COMPOUNDS: Beta-vetispirene, terpinen-4-ol, 5-epiprezizane, khusimene, alpha-muurolene, calacorene, beta-humulene, delta-selinene, valencene, gamma-vetivene, alpha-amorphene, beta-vetivenene, epizizanal, 3-epizizanol, delta-amorphene, iso-khusimol, beta-vetivone, (E)-isoeugenol, elemol, alpha-cadinol, eudesm-7(11)-en-4-ol, nootkatol, (E)-isovalencenol, 14-hydroxy-delta-cadinene, khusimone

REPORTED THERAPEUTIC PROPERTIES: Analgesic (pain relief), antibacterial, antifungal, anti-inflammatory, antimicrobial, antioxidant, antiseptic, **antispasmodic**, **antirheumatic**, **antiarthritic**, supports healthy cell division, insect repellent, increases redness and circulation of a localized area, wound healing, **nervine (calms and soothes the nerves)**, aids detoxification, antiparasitic, reduces the appearance of scars, aphrodisiac, **encourages restful sleep**, antidepressant, **relieves anxiety**, **encourages focus and concentration**, reduces anger, grounding, **stress management**, combats grief, reduces fear

CAUTIONS:

- None currently known.

SELECTED EVIDENCE:

- Vetiver provides potent antioxidant protection, reduces lipid peroxidation, and prevents the formation of melanin by melanoma cancer cells.[\[2322\]](#)
- Inhalation of low doses of vetiver oil enhances reaction time and improves attention while performing visual discrimination tasks (something critical to reading, writing, learning, and social behavior).[\[2323\]](#)
- *In vitro* research suggests that vetiver inhibits *S. aureus*.[\[2324\]](#)
- Animal research concluded that vetiver reduces anxiety by altering central amygdaloid nucleus (part of the amygdala that is involved in the expression of conditioned fear and processes pain) activity.[\[2325\]](#)
- Vetiver is a potent free-radical scavenger according to *in vitro* research.[\[2326\]](#)
- Root extract of vetiver inhibited two *M. tuberculosis* strains, making it a useful natural remedy



WHITE FIR#

Abies concolor, Abies iowiana, Picea concolor, Pinus concolor

FAMILY: Pinaceae

NOTE: Top-Middle

AROMA INTENSITY: Medium

AROMA: Fresh, piney, clean, woody

COMMON EXTRACTION METHOD: Steam distilled from the needles (leaves)

POSSIBLE SUBSTITUTE OILS: Silver fir, balsam fir, blue spruce, spruce (black), palo santo, blue cypress, juniper (needles)

BLENDS WELL WITH: Balsam fir, birch, blue spruce, cassia, cedarwood, cypress, chamomile (German, Roman), frankincense, galbanum, lavender, lemon, myrtle, palo santo, pine, sandalwood, silver fir, spruce (black), tsuga, wintergreen

RECOMMENDED DILUTION RANGE: 5%–Neat

PRIMARY COMPOUNDS*:[\[2328\]](#)

Beta-Pinene	41.5%–52.2%
Limonene	1.6%–23.0%
Bornyl Acetate	0.6%–20.2%
Camphene	0.5%–9.0%
Alpha-pinene	4.4%–7.9%
Alpha-Terpineol	1.2%–6.9%
Beta-Phellandrene	1.1%–6.5%
Naphthalenol	0.0%–6.4%

Camphene Hydrate 0.1%–4.1%

#Both *Abies alba* and *Abies concolor* are referred to as white fir, and both are available on the essential oil market. *Abies alba* is more commonly called silver fir or silver spruce, whereas *A. concolor* is called white fir according to the United States Department of Agriculture. [\[2329\]](#) They are two distinct species, and the chemical compounds are very different. [\[2330\]](#) *A. concolor* is the true white fir essential oil.

*High levels of bornyl acetate and camphene are usually only found in trees growing in the Wasatch Mountains of Utah and New Mexico, U.S.A.

OTHER COMPOUNDS: Tricyclene, myrcene, alpha-phellandrene, delta-3-carene, terpinolene, 2-nonanone, linalool, endo-fenchol, citronellal, borneol, terpinen-4-ol

REPORTED THERAPEUTIC PROPERTIES: **Analgesic (pain relief)**, **anti-inflammatory**, antiarthritic, antirheumatic, antimicrobial, antiseptic, **antioxidant**, **aids circulation**, increases redness and circulation of a localized area, **antispasmodic**, expectorant, decongestant, supports immune system function, disinfectant, removes excess mucous, relieves cough, **supports respiratory function**, reduces fever, stimulating, energizing, **encourages feelings of stability and empowerment**

CAUTIONS:

- None currently known.

SELECTED EVIDENCE:

- None found.



WINTERGREEN

Gaultheria procumbens, *Gaultheria fragrantissima*, *Gaultheria yunnanensis*

FAMILY: Ericaceae

NOTE: Top-Middle

AROMA INTENSITY: Strong

AROMA: Sharp, sweet, woody, slightly minty

COMMON EXTRACTION METHOD: Steam distilled from the leaves

POSSIBLE SUBSTITUTE OILS: Birch

BLENDS WELL WITH: Birch, cajeput, oregano, peppermint, ravintsara, spearmint, thyme, ylang ylang

RECOMMENDED DILUTION RANGE: 1.5%–20%; 50% for some conditions

PRIMARY COMPOUNDS: [\[2331\]](#), [\[2332\]](#)

Methyl Salicylate 96.9%–99.6%

OTHER COMPOUNDS: Alpha-pinene, delta-3-carene, d-limonene, myrcene, delta-cadinene

REPORTED THERAPEUTIC PROPERTIES: Analgesic (pain relief), **anti-inflammatory**, **antirheumatic**, antiarthritic, antiseptic, antispasmodic, astringent, relieves bone pain, deodorant, expels excess gas, eases sports injuries, **stimulates liver function**, eases cough, supports normal menstruation, diuretic, stimulates gallbladder function, **increases redness and circulation of a localized area**, relaxing, warming, stimulating, promotes mental alertness, promotes a positive self-image and self-acceptance, encourages forgiveness

CAUTIONS:

- Avoid with children under age 12. The high salicylate content in birch may increase the risk of a very serious and life-threatening illness called Reye syndrome in children under 12. Reye syndrome is sudden brain damage and liver dysfunction that most commonly occurs in children ages 4 to 12. It has an unknown cause, but it has been seen in children who were given aspirin when they had chicken pox or flu. [\[2333\]](#)
- Oral caution—As little as 2.5 ml can cause toxicity and 4 ml may be fatal in children. As little as 5 ml could result in methyl salicylate poisoning in adults and more than 5 ml can be fatal. [\[2334\]](#), [\[2335\]](#), [\[2336\]](#), [\[2337\]](#), [\[2338\]](#) Do not exceed 5 drops per day orally for an adult.
- Do not use during pregnancy or lactation. May cause congenital abnormalities and fetal malformations. [\[2339\]](#), [\[2340\]](#)
- Avoid with epilepsy and Parkinson's disease due to methyl salicylate content. [\[2341\]](#), [\[2342\]](#)
- May interact with aspirin, blood-pressure, antiplatelet, and anticoagulant medications, and increase the risk of bleeding among people with bleeding disorders both topically and orally. [\[2343\]](#), [\[2344\]](#), [\[2345\]](#), [\[2346\]](#)
- Toxicity may occur with overuse topically and the absorption of methyl salicylate increases with repeated applications. [\[2347\]](#) Not intended for long-term use.
- Avoid orally with gastroesophageal reflux disease (GERD). May cause accumulation of fluid in the larynx (laryngeal edema) and lead to airway obstruction in sensitive individuals. [\[2348\]](#)
- Avoid in individuals allergic to aspirin, methyl salicylate, or other NSAIDs. Methyl salicylate may be metabolized to the known NSAID, salicylic acid, by the liver. [\[2348a\]](#)

SELECTED EVIDENCE:

- Oral administration of salicylate glucoside from wintergreen oil (200 to 800 mg/kg) prevented abdominal contractions, and reduced pain and inflammation, in mice similarly to aspirin but without causing stomach ulcers because it released the salicylates slowly in the intestine rather than in the stomach. [\[2349\]](#), [\[2350\]](#)

- Salicylate glucoside obtained from wintergreen oil inhibited the production of proinflammatory molecules and the excess production of nitric oxide *in vitro*.[\[2351\]](#),[\[2352\]](#),[\[2353\]](#)
- A methyl salicylate ointment applied to the temples and jaw relieved a headache caused by electroconvulsive treatment (a procedure used to treat mental illness where electrical currents are passed through the brain to cause a trigger a brief seizure).[\[2354\]](#)



YLANG YLANG (Flowers)

Cananga odorata

FAMILY: Annonaceae

NOTE: Middle-Base

AROMA INTENSITY: Medium

AROMA: Intensely sweet, floral, rich

COMMON EXTRACTION METHOD: Steam distilled from the flowers; also solvent extracted (particularly for the perfume industry)

POSSIBLE SUBSTITUTE OILS: Goldenrod, petitgrain, neroli, helichrysum

BLENDS WELL WITH: Bay laurel, bergamot, cajeput, cardamom, chamomile (German, Roman), clary sage, clove, copaiba, coriander, cypress, eucalyptus, geranium, ginger, juniper, lavender, melissa, neroli, orange, palmarosa, patchouli, rose, sandalwood, turmeric, vetiver

RECOMMENDED DILUTION RANGE: 3%–33%; neat for some conditions

PRIMARY COMPOUNDS: [\[2355\]](#),[\[2356\]](#),[\[2357\]](#),[\[2358\]](#),[\[2359\]](#),[\[2360\]](#)

Ylang Ylang Complete

Germacrene D	18.8%–24.4%
Beta-Caryophyllene	1.5%–18.8%
Alpha-Farnesene	3.9%–12.9%
Geranyl Acetate	7.6%–12.6%

Linalool	1.3%–10.6%
Benzyl Benzoate	0.0%–7.6%

Ylang Ylang I French

Benzyl Acetate	27.5%
Para-Cresyl Methyl Ether	9.7%
Linalool	9.0%
Methyl Benzoate	6.1%
3-Methyl-2-Butenyl Acetate	4.2%
Neryl Acetate	2.7%
3-Methyl-3-Buten-1-ol Acetate	2.2%
Alpha-Farnesene	1.6%

Ylang Ylang IV French

(E,E)-Alpha-Farnesene	10.1%
Sesquiterpene (MW 204)	7.5%
Methyl Caprylate	7.2%
Alpha-Humulene	6.2%
T-Muurolol	4.4%
Benzyl Salicylate	4.1%
Beta-Curcumene	2.7%
Gamma-Cadinene	2.1%
(2E,6E)-Farnesyl Acetate	2.1%
Isogermacrene-D	1.8%
Para-Cresyl Methyl Ether	1.6%
Cinnamyl Acetate	1.6%
Aromadendrene	1.5%
Alpha-Cadinol	1.5%
(2Z,6Z)-Farnesol	1.4%

Ylang Ylang I Madagascan

Linalool	11.7%–30.0%
Benzyl Benzoate	4.3%–14.9%
Germacrene D	0.1%–13.5%
Beta-Caryophyllene	1.1%–11.2%
Geranyl Acetate	6.2%–11.0%
Methyl Salicylate	1.7%–10.4%
Para-Cresyl Methyl Ether	1.1%–10.4%
Benzyl Acetate	3.3%–8.0%
(E,E)-Farnesyl Acetate	0.5%–7.8%
Methyl Benzoate	1.7%–5.6%

Ylang Ylang II Madagascan

Beta-Caryophyllene	1.7%–19.6%
Germacrene D	1.5%–19.3%
Gamma-Cadinene + Alpha-Farnesene	1.7%–12.7%
Benzyl Benzoate	5.3%–12.3%
Linalool	3.9%–12.2%
Geranyl Acetate	2.6%–7.2%
(E,E)-Farnesyl Acetate	0.7%–6.2%
Alpha-Caryophyllene + (E)-Cadinene	3.4%–5.8%
Para-Cresyl Methyl Ether	0.6%–5.3%
Methyl Salicylate	0.6%–5.3%
Delta-Cadinene	2.1%–5.2%

Ylang Ylang III Madagascan

Germacrene D	15.1%–25.1%
Beta-Caryophyllene	14.8%–21.5%
Gamma-Cadinene + Alpha-Farnesene	6.5%–17.4%
Benzyl Benzoate	5.9%–12.8%
Alpha-Caryophyllene + (E)-Cadinene	3.9%–5.8%

Solvent Extracted

Trans-Caryophyllene	25.0%–26.1%
Germacrene	10.3%–12.0%
Alpha-Humulene	10.7%–10.8%
Linalool	6.8%–7.4%
Delta-Cadinene	5.4%–7.6%
Alpha-Longipinene	6.8%–6.9%
Alpha-Farnesene	6.2%–6.8%

OTHER COMPOUNDS: 3-methyl-3-buten-1-ol acetate, 3-methyl-2-butenyl acetate, n-hexyl acetate, benzyl alcohol, methyl caprylate, alpha-cadinene, alpha-bergamotene, alpha-caryophyllene, copaene, geraniol, farnesol, muurolol, benzyl salicylate, eugenol, 2-phenylethyl acetate, neryl acetate, alpha-copaene, beta-cubebene, beta-ylangene, beta-copaene, cinnamyl acetate, isoeugenol, beta-curcumene, guaiol

REPORTED THERAPEUTIC PROPERTIES: Antibacterial, antifungal, anti-inflammatory, antiseptic, antispasmodic, **balances breathing rate**, supports healthy cell division, benefits oily skin, encourages hair growth, **balances and regulates heart function**, **helps lower high blood pressure**, disinfectant, expectorant, nervine (calms and soothes the nerves), wound healing, sedating, **stress management**, **reduces anxiety**, **aphrodisiac**, promotes euphoria, stress management, increases

feelings of love, pleasure, and joy, **antidepressant**, reduces fear, anger, despondency, and frustration, reduces mood swings.

CAUTIONS:

- Dilution is recommended as ylang ylang is commonly reported to cause skin sensitization or irritation.

SELECTED EVIDENCE:

- Inhaling lavender, lemon, and ylang ylang oil (2:2:1 ratio) reduced systolic blood pressure, and influenced heart rate and sympathetic nervous system activity in people with essential hypertension (high blood pressure without an identifiable cause).[\[2361\]](#) Another study found that inhaling lavender, ylang ylang, and bergamot oils once daily for four weeks reduced cortisol levels, psychological stress, and blood pressure in people with essential hypertension.[\[2362\]](#)
 - A clinical study concluded that both cortisol and systolic blood pressure declines after inhalation of a combination of lavender, ylang ylang, marjoram, and neroli oil in those with high blood pressure or pre-high blood pressure.[\[2363\]](#)
 - Ylang ylang can prevent mosquito bites (up to 98.9%) for up to eighty-eight minutes, which is better than two chemical repellents, but not as effective as DEET (98.5%, for up to 182 minutes).[\[2364\]](#),[\[2365\]](#)
 - *In vitro* research concluded that ylang ylang oil prevented the adherence of *K. pneumonia* and *S. aureus* to catheters, which could help prevent hospital-acquired infections.[\[2366\]](#)
 - Both the topical application and inhalation of ylang ylang increased the perceived self-esteem among healthy individuals.[\[2367\]](#)
 - Topical application of ylang ylang oil (1 ml of a 20% solution in sweet almond oil) to the lower abdomen increased skin temperature and reduced blood pressure, which promoted a more calm and relaxed state among healthy individuals.[\[2368\]](#)
 - Animal (intravenous injection of 0.01 to 0.005 ml) and *in vitro* research suggests that ylang ylang oil relaxes an overactive bladder.[\[2369\]](#)
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ESSENTIAL OIL THERAPY FOR HEALTH CONDITIONS

The following suggestions are recommended to preserve life and correct health conditions if modern medicine is not available or with the explicit permission of your health-care practitioner. They are not meant to be substituted for medical treatment when it is available nor to replace treatment prescribed by your physician or health-care practitioner. Do not attempt to diagnose or prescribe essential oils for conditions that require professional attention. Always consult a physician for any health condition, injury, or illness.

If you have more than one condition to address it is usually advised to work on one condition at a time, beginning with the most pressing. The most critical condition may be psychological because of the significant correlation between a person's psychological state and health conditions experienced. In fact, it is estimated that up to 90 percent of all doctor visits are stress-related,^[2370] and that a number of chronic health conditions are associated with stress.

If the protocols for two or more of your health conditions recommend the same oil or oils, you may be able to address more than one concern with one protocol. In this case, it is recommended to use the protocol with most number of drops recommended. For example, if one health protocol recommends 3 drops of lavender and the other 5, use the protocol that recommends 5 drops for both health conditions, rather than taking 8 drops.

For ease of use the recommended oils for a specific condition may be mixed together as a blend and used as suggested, rather than mixed together for each application and use.

The recommendations are based on known protocols, consensus of user testimonials, historical usage, and published scientific research. The protocols are intended to ease symptoms, restore normal function of cells, organs, or systems, reestablish balance or homeostasis, eliminate illness, or manage an aspect of the disease and/or its progression.

ABDOMINAL CRAMPS

Topical—Apply one or a combination of peppermint, German chamomile, ginger, or juniper to abdomen (may require dilution) until cramps subside.

Oral—Ingest a combination of 3 drops each of juniper, peppermint, and ginger every 2 hours or until cramps subside.

ABDOMINAL MIGRAINE

Topical—Apply 1 to 2 drops each of lavender, ginger, and German chamomile on the abdomen and cover with a warm wet towel up to 3 times daily. Apply 6 to 8 drops of orange oil to the bottoms of the feet, 2 times daily.

Oral—Take a capsule filled with 3 drops each of lemon and peppermint, and 1 drop of basil up to 3 times daily. For younger children, add a trace amount of each oil to warm water with a toothpick and drink, 2 times daily.

ABSCESS

Topical—Apply one or a combination of frankincense, lavender, and melaleuca (tea tree) to the abscess several times daily.

ACNE

Topical—Apply one or a combination of frankincense, melaleuca (tea tree), German chamomile, geranium, or lavender at least 2 times daily.

Oral—Purify the blood by taking 5 drops each of geranium, clove, and grapefruit, 2 times daily.

ACNE, CYSTIC

Topical—Mix together 2 drops each of thyme, lavender, rosemary, and melaleuca (tea tree) in three-quarters cup water and one-quarter cup organic apple cider vinegar, and then apply a small amount of this mixture with a cotton ball, 2 to 3 times daily. A trace amount of any of the mentioned oils diluted in 4 drops of jojoba or grapeseed carrier oil may be applied neat to the cysts up to 3 times daily as well.

Oral—Take a capsule filled with 2 drops each of cinnamon, oregano, thyme, and clove, morning and evening.

ADDICTIONS

Inhalation—Apply 2 drops of lavender, cinnamon, or grapefruit to the palms, cup over nose and mouth, and inhale as needed.

Topical—Apply 1 to 3 drops of lavender or German chamomile to the temples, back of the neck, and forehead to relax the mind and body.

Other—Practice deep breathing for 15 minutes as often as needed each day.

ADDISON'S DISEASE

Topical—Apply 5 drops each of rosemary and pine and 2 drops each of geranium, blue spruce, balsam fir, and clove 1 at a time to the adrenal area on the back (about midway). Gently feather each oil up the spine with the back of your fingers, and after applying all of the oils, cover entire back with 20 drops of carrier oil and massage into entire back. To improve results, apply a warm washcloth after complete process and leave in place until cool. Repeat this process up to 3 times daily. Apply 3 to 5 drops of oregano, thyme, basil, cypress, wintergreen, marjoram, and peppermint (layered in that order, 1 at a time) to the spine and massage into back on either side of the spine, once per week.

Other—Women should also consider the following: apply 2 to 4 drops of clary sage to the forehead or wrists, 1 to 2 times daily.

Other: Consider a natural bioidentical progesterone.

ADENOIDITIS (Inflamed Adenoids)

Topical—Apply 2 drops each of clove, cinnamon, lemon, oregano, and rosemary to the feet, 1 to 3 times daily. Apply myrrh and copaiba to the outside of the jaw just beneath the ears.

Oral—Gargle with a mixture of 1 drop each of copaiba, frankincense, and lemon; 1 teaspoon of honey; and one-quarter teaspoon of salt, 2 to 4 times daily.

ADRENAL FATIGUE

Topical—Apply 5 drops each of rosemary and pine and 2 drops each of geranium, blue spruce, balsam fir, and clove 1 at a time to the adrenal area on the back (about midway). Gently feather each oil up the spine with the back of your fingers, and after applying all of the oils, cover entire back with

20 drops of carrier oil and massage into entire back. To improve results, apply a warm washcloth after complete process and leave in place until cool. Repeat this process up to 3 times daily. Apply 3 to 5 drops of oregano, thyme, basil, cypress, wintergreen, marjoram, and peppermint (layered in that order, 1 at a time) to the spine and massage into back on either side of the spine, once per week.

Other—Women should also consider the following: apply 2 to 4 drops of clary sage to the forehead or wrists, 1 to 2 times daily.

Other: Consider a natural bioidentical progesterone. Practice deep breathing techniques for 15 minutes, 2 times daily.

ALLERGIES

Oral—Take 1 capsule filled with 5 drops each of lavender and German chamomile and 3 drops of blue tansy, 1 to 3 times daily. Alternately, take a capsule filled with 3 drops each of peppermint, lemon, and lavender, 1 to 3 times daily.

Topical—Apply 1 drop lavender under the nose and 1 to several drops on the feet, 3 to 5 times daily.

ALTITUDE SICKNESS

Oral—Take a capsule filled with 5 drops of lemon, and 2 drops each of frankincense, cedarwood, and peppermint 1 to 3 times daily.

ALZHEIMER'S DISEASE/DEMENTIA

Topical—Massage 6 to 8 drops of lavender to the shoulders, back, and bottoms of the feet to improve sleep quality. Apply 1 to 2 drops each of frankincense, vetiver, and rosemary to the base of the neck, crown of the head, and behind the ears, 2 to 4 times daily. Apply 8 to 10 drops of orange oil on the bottoms of the feet, 1 to 2 times daily.

Inhalation—Apply 1 drop each of rosemary and peppermint oil on palms, rub together, and cup over nose and mouth to inhale as often as needed. Alternately, place 2 to 3 drops each of rosemary and peppermint oil in boiling water and place next to individual to inhale.

AMOEBIC DYSENTERY

Oral—Take a capsule filled with 3 drops each of oregano and lemongrass and 1 drop of thyme, 1 to 3 times daily.

Topical—Apply 1 drop each of basil, fennel, copaiba and thyme to the lower abdomen, 2 to 4 times daily.

AMYOTROPHIC LATERAL SCLEROSIS (ALS)

[See LOU GEHRIG'S DISEASE](#)

ANEMIA

Oral—Take one or a combination of 4 to 6 drops of German chamomile, lemon, frankincense, or helichrysum, 2 times daily.

Topical—Apply 1 to 3 drops of German chamomile, frankincense, lemon, and/or helichrysum to the bottom of the feet, 2 to 4 times daily.

ANEURYSM

Topical—Mix 5 drops cistus and 1 drop each of helichrysum and cypress in equal parts carrier oil and apply to the head and back of the neck, every 2 hours.

Oral—Take 10 drops of lemon, 3 to 4 times daily.

ANGER

Inhalation—Place 1 drop each of ylang ylang, orange, and German chamomile on a tissue and inhale as needed.

Topical—Massage the soles of the feet (focusing on the liver area on the outside of the right foot) with 1 drop each of ylang ylang, orange, German chamomile, and lavender, 1 to 3 times daily.

ANGINA

Topical—Apply 1 to 3 drops each of wintergreen, clove, goldenrod, ylang ylang, and/or helichrysum over heart area, 2 to 4 times daily.

Oral—Take 10 drops of a combination of helichrysum, clove, lemon, or orange, 1 to 3 times daily.

ANKYLOSING SPONDYLITIS

Oral—Take a capsule filled with 7 drops of frankincense and 3 drops each of balsam fir and copaiba, 2 to 4 times daily. Take a capsule filled with 15 drops of lemon once daily.

Topical—Apply 2 drops each of basil, balsam fir, cypress, copaiba, and lavender to the back and hips, 1 to 3 times daily. Apply 3 to 5 drops of oregano, thyme, basil, cypress, wintergreen, marjoram, and peppermint (layered in that order, 1 at a time) to the spine and massage into back on either side of the spine, 2 times weekly.

Other—Keep the back limber by performing yoga cat-cow poses for 1 to 2 minutes immediately before bedtime.

ANXIETY

Topical—Apply 1 to 3 drops of lavender and cedarwood to the base of the skull, neck, and head.

Oral—Take 1 capsule filled with 3 drops each of lavender, cedarwood, and German chamomile, 1 to 3 times daily.

Inhalation—Apply 1 to 2 drops of cedarwood and lavender to 1 palm, rub together with the other palm, and cup hands over mouth and nose to inhale as often as needed.

APNEA, SLEEP

Topical—Apply 1 to 3 drops of thyme and/or black spruce to the bottoms of each big toe and the feet before retiring to bed.

Inhalation—Apply 1 drop each of black spruce and balsam fir on pillowcase before bedtime.

APPENDICITIS

Severe abdominal pain requires medical attention. The appendix could burst if not treated in a timely manner, which allows its contents to leak out and spreads infection throughout your abdomen.

Oral—Take a capsule filled with 3 drops each of ginger, lemon, and peppermint, and 2 drops each of basil and oregano, 2 to 4 times daily.

Topical—Apply 2 drops each of wintergreen, orange, and lemon to the arch of the right foot and near the heel.

Other—*DO NOT* massage the abdomen. Appendicitis is considered a medical emergency and professional care should be sought as soon as possible.

ARACHNOID CYSTS

Topical—Apply 3 drops each of frankincense, vetiver, sandalwood, and blue spruce along the entire

spine and to the base of the hairline. Apply 8 to 10 drops of orange oil to the feet, 2 times daily. Apply 3 to 5 drops of oregano, thyme, basil, cypress, wintergreen, marjoram, and peppermint (layered in that order, 1 at a time) to the spine and massage into back on either side of the spine, 2 times weekly.

Oral—Take a capsule filled with 5 drops each of frankincense, vetiver, and sandalwood, 2 to 4 times daily.

ARTHRITIS (RHEUMATOID)

Topical—Apply 1 to 2 drops each of peppermint, wintergreen, frankincense, eucalyptus, and copaiba to affected area as needed (cypress and helichrysum may also be added to increase circulation to affected joints). Apply 3 to 5 drops of oregano and clove to the bottom of the feet, 2 times daily.

Oral—Take 1 capsule filled with 4 drops each of frankincense, balsam fir, and copaiba, and 1 drop of nutmeg, 2 times daily.

ARTHROGRYPOSIS MULTIPLEX CONGENITA (ARTHROGRYPOSIS)

Topical—Create a mixture of 1 drop each of marjoram, cypress, frankincense, lavender, basil, and German chamomile in 4 teaspoons of carrier oil and massage into the affected joints/muscles up to 3 times daily.

ASPERGER SYNDROME

Topical—Apply 1 to 3 drops of blue spruce to both sides of the neck, 1 to 3 times daily. Apply 8 to 10 drops of orange oil to the bottoms of the feet, 1 to 2 times daily. Apply 2 drops each of frankincense, vetiver, and sandalwood to the forehead and behind the ears 1 to 3 times daily. Applying a mixture of 2 drops each of lavender, ylang ylang, blue tansy, and orange to the bottoms of the feet or by gently stroking the person's head with the oils on your hand may be calming during hyperactive episodes.

Inhalation—Inhaling 1 to 2 drops of lavender may reduce anxious feelings.

Other—Many individuals with Asperger syndrome are opposed to touch and certain odors, so it may be necessary to offer them the recommended oils and allow them to choose which ones to apply.

ASTHMA

Topical—Apply 1 to 2 drops each of ginger, myrtle, thyme, and pine to the chest as often as needed. Apply 1 to 2 drops of oregano, peppermint, thyme, and myrtle to the bottoms of the feet, 2 to 3 times daily.

Inhalation—Apply 1 to 2 drops of lavender, ginger, or myrtle to 1 palm, rub together with other palm, cup over mouth and nose and inhale. Place 4 to 6 drops each of 1 or more of myrtle, ginger or lavender in 3 inches of hot water that is not too hot to touch with your hand and cover head with towel to inhale every 4 to 6 hours.

ATHEROSCLEROSIS

Oral—Ingest 4 drops each of rosemary, juniper, lemon, and ylang ylang, 2 to 4 times daily.

Topical—Apply ylang ylang, rosemary, and/or juniper on carotid arteries and over heart, 2 to 4 times daily.

ATHLETE'S FOOT

Topical—Soak foot in Epsom salts (use coarse sea salt for diabetics) bath with melaleuca (tea tree)

and lavender added directly to the salts (not the water), 2 times daily. Apply 3 to 5 drops each of oregano, lemongrass, and melaleuca (tea tree) to affected areas after soaking.

ATTENTION-DEFICIT DISORDER (ADD) or ATTENTION-DEFICIT HYPERACTIVITY DISORDER (ADHD)

Topical—Apply 1 to 3 drops each of cedarwood, German chamomile, and lavender and/or frankincense and vetiver to the back of the neck, brain stem, and head up to 8 times daily (frankincense and vetiver increase focus, lavender and German chamomile help calm anxious feelings). Apply 3 to 5 drops of orange, 2 to 3 times daily.

Oral—Take 1 capsule filled with 2 drops each of cedarwood, lavender, and frankincense, 2 times daily.

AUTISM

Topical—Apply 1 drop of blue spruce to both sides of the neck, 1 to 3 times daily. Apply 8 to 10 drops of orange oil to the bottoms of the feet, 1 to 2 times daily. Apply 2 drops each of frankincense, vetiver, and sandalwood to the forehead and behind the ears, 1 to 3 times daily. Applying a mixture of 2 drops each of lavender, ylang ylang, blue tansy, and orange to the bottoms of the feet or by gently stroking the person's head with the oils on your hand may be calming during hyperactive episodes.

Inhalation—Inhaling 1 to 2 drops of lavender may reduce anxious feelings.

Other—Many individuals with autism are opposed to touch and certain odors, so it may be necessary to offer them the recommended oils and allow them to choose which ones to apply.

AUTOIMMUNE DISORDER (Immune Balancing Protocol)

Oral—Take a capsule filled with 3 drops each of vetiver, frankincense, lavender and spruce, and 1 drop of clove, morning and evening. Take an additional capsule with 3 drops each of clove, oregano, lemon, cinnamon, and 1 drop of eucalyptus and melaleuca (tea tree) once midday.

BACK PAIN

Topical—Apply a combination of 1 to 3 drops of wintergreen, black spruce, balsam fir, copaiba, peppermint, and frankincense to affected area, 2 to 4 times daily. For muscular back pain, use 2 to 3 drops of basil and marjoram instead.

Oral—Take 1 capsule with 5 drops each of frankincense, copaiba, and balsam fir, 2 times daily.

BARRETT'S ESOPHAGUS

Oral—Swallow 5 drops each of lemon and ginger in water, 2 to 4 times daily.

Topical—Apply 2 drops each of frankincense, ginger, lavender, and blue tansy externally to the throat and breastbone areas, 2 to 4 times daily.

BASAL CELL CARCINOMA

Topical—Apply 2 to 4 drops each of sandalwood, frankincense, geranium, cinnamon, and cypress to the affected area, 3 to 5 times daily. Apply 8 to 10 drops of orange oil to the bottoms of the feet, 2 to 3 times daily. Apply more geranium and helichrysum as the area begins to heal to prevent scarring.

Oral—Take 0.018 to 0.045 ml of enriched frankincense or frankincense per pound of body weight (for example, a 150-pound person would take 2.7 to 6.75 ml daily) in 3 to 6 divided doses throughout the day with food for 21 days.

BED WETTING (NOCTURNAL URINATION)

Topical—Apply 3 to 5 drops of cypress mixed with carrier oil over the stomach and bladder area

before going to bed.

BELL'S PALSY

Topical—Apply 1 drop each of frankincense, helichrysum, geranium, blue spruce, and copaiba directly behind and underneath both ears and on the affected area of the face, 2 to 3 times daily. Apply 3 to 5 drops of oregano, thyme, basil, cypress, wintergreen, marjoram, and peppermint (layered in that order, 1 at a time) to the spine and massage into back on either side of the spine, 2 times weekly.

Oral—Take 1 capsule filled with 2 drops each of clove, oregano, lemon, cinnamon, and 1 drop of eucalyptus, 2 to 3 times daily.

BENIGN MOTOR NEURON DISORDER

Topical—Apply 3 to 5 drops of oregano, thyme, basil, cypress, wintergreen, marjoram, and peppermint (layered in that order, 1 at a time) to the spine and massage into back on either side of the spine, 2 to 4 times weekly; apply 1 drop each of blue spruce, vetiver, frankincense, and sandalwood behind the ears and at the base of the skull, 2 to 4 times daily. Apply 10 drops of orange oil on the bottoms of the feet, 2 times daily. Apply 1 to 2 drops each of marjoram, pine, lavender, and lemongrass to the major muscles, 1 to 3 times daily.

Oral—Take a capsule filled with 5 drops each of frankincense, sandalwood, and myrrh, 1 to 3 times daily.

BENIGN PROSTATIC HYPERPLASIA (BPH), ENLARGED PROSTATE

Topical—Apply 1 drop of frankincense, myrrh, orange, balsam fir, and copaiba heavily diluted to the area between the anus and scrotum, 2 times daily.

Retention—Mix 3 drops each of frankincense, myrrh, and tsuga in 1 tablespoon of vegetable oil and insert rectally. Retain as long as possible.

Oral—Take a capsule filled with 4 drops each of oregano, vetiver, and rosemary, 1 to 3 times daily.

BIPOLAR DISORDER

Only use in conjunction with Western medical options and with approval from a physician.

Topical—Apply 1 drop each of frankincense, cedarwood, sandalwood, spruce, and lavender to the base of the skull and behind the ears, 2 to 4 times daily. Apply 2 to 3 drops of helichrysum over the liver, 1 to 3 times daily. Apply 5 drops of orange and 2 drops of lemon to the bottoms of the feet, 3 times daily.

Oral—Take a capsule filled with 5 drops of helichrysum, 1 to 3 times daily.

BITES (ANIMAL)

Topical—Apply 1 drop each of thyme, oregano, lavender, German chamomile, and lemongrass every 15 minutes for the first 2 hours, and then 1 time per hour for the next 24 to 48 hours. Apply peppermint to the bite as needed for pain.

Oral—Take a capsule filled with 3 drops of oregano, and 1 drop each of eucalyptus, melaleuca (tea tree), and thyme, 2 to 3 times daily.

BLADDER INFECTION

Oral—Take 1 capsule filled with 2 drops each of clove, oregano, lemon, cinnamon, and 1 drop of eucalyptus, 2 to 3 times daily.

Topical—Apply 2 drops each of clove, oregano, eucalyptus, and cinnamon to the bottoms of the feet,

2 to 3 times daily. Apply 3 drops each of juniper, oregano, and frankincense with 10 drops of vegetable oil to the pelvic area, 1 to 3 times daily.

Other—Drink 2 8-ounce glasses of unsweetened cranberry or blueberry juice daily for 3 to 5 days.

BLEEDING

Seek medical attention immediately if the blood spurts from the wound, or if it will not stop bleeding after 10 minutes of direct pressure.

Topical—Apply 1 to 2 drops of geranium, cypress, helichrysum, or lavender near the wound every 5 minutes until bleeding stops.

Other—Apply direct pressure to the wound.

BLISTERS

Topical—Apply 1 to 3 drops of lavender, German Chamomile, myrrh, or helichrysum to the blister several times daily.

BLISTERS (FEVER)

Topical—Apply 1 drop of melaleuca (tea tree), clove, or rosemary to the blister several times daily.

BLOATING

Oral—Take 1 to 3 drops of peppermint, juniper, and/or fennel in a capsule, 2 times daily.

BLOOD CLOT

Abnormal blood clots can be a medical emergency and lead to a stroke, heart attack, or other serious conditions. Only use this protocol in conjunction with Western medical options and with approval from a physician.

Topical—Massage 4 drops of lavender to the bottoms of the feet up to 3 times daily. Apply 1 to 3 drops of cistus, lemon, orange, and helichrysum to the affected area, 3 to 5 times daily.

Oral—Take 2 capsules with 3 drops each of cistus, helichrysum, orange, grapefruit, and lemon, 2 times daily.

BOILS

Topical—Apply 1 to 2 drops of lavender, frankincense, myrrh, peppermint, or melaleuca (tea tree), several times daily.

BONE SPURS

Topical—Apply 1 drop each of eucalyptus, myrtle, pine, lavender, tsuga, oregano, and peppermint to affected area, 2 to 3 times daily. Alternately, apply 2 to 5 drops of wintergreen, balsam fir, or cypress to affected area, 2 to 4 times daily.

BRAIN INJURY

Only use this protocol in conjunction with Western medical options and with approval from a physician.

Topical—Apply 1 to 2 drops each of frankincense, vetiver, cedarwood, sandalwood, and helichrysum to the base of the skull and back of the neck, 3 to 5 times daily. Apply 2 drops each of black spruce, blue tansy, and frankincense to the bottom of the feet, 2 to 3 times daily. When the person recovers

enough, apply 3 to 5 drops of oregano, thyme, basil, cypress, wintergreen, marjoram, and peppermint (layered in that order, 1 at a time) to the spine and massage into back on either side of the spine, 2 times weekly.

Oral—Take a capsule filled with 3 drops each of frankincense, vetiver, sandalwood, cedarwood, and helichrysum, 1 to 3 times daily. Alternately, place 1 drop of each oil on the tongue, 1 to 3 times daily.

BRITTLE BONES

Topical—Apply 1 to 3 drops of wintergreen, helichrysum, and balsam fir to affected bones, 2 to 3 times daily. Women apply 1 to 3 drops of clary sage to the forehead or carotid arteries, 3 times daily. Men apply 3 drops of blue spruce to the feet, 3 times daily.

BROKEN BONES

Broken bones require more than essential oils. Seek medical attention to have the bone set and casted. This protocol is intended to help relieve pain and encourage normal healing of bones. It should be followed for the duration that the cast is on, applying oils for 3 weeks before resting 1 week, then repeating the application process.

Topical—Apply 3 drops each of balsam fir, cypress, helichrysum, lemongrass, and wintergreen to the area, 2 to 4 times daily.

Oral—Take a capsule filled with 5 drops each of balsam fir, copaiba, and frankincense, 1 to 3 times daily.

Other—Do not move the person if at all possible; this could make the injury worse. Apply a splint above and below the fracture sites if you are trained how to do so.

BRONCHITIS

Topical—Apply 3 to 5 drops of eucalyptus, ginger, myrtle, and/or copaiba to the chest as needed. Apply 3 to 5 drops each of oregano and 1 drop of thyme to the bottoms of the feet, 2 to 4 times daily.

Inhalation—Place 2 to 3 drops each of eucalyptus, myrtle, and copaiba in half cup of hot water in bowl, cover head and bowl with towel and inhale 3 to 6 times daily. To improve outcome, hold your breath for as long as possible during the inhalation then breathe out slowly.

Oral—Take 1 capsule filled with 3 drops carrier oil and 2 drops each of clove, cinnamon, lemon, oregano, and rosemary, 1 to 3 times daily.

BRUCELLOSIS

Oral—Take a capsule filled with 3 drops each of cinnamon, lemon, peppermint, marjoram, and 1 drop of nutmeg, 1 to 3 times daily.

Topical—Apply 3 drops each of lemon and peppermint to the spine as needed for fever. Apply 1 to 2 drops each of basil, marjoram, and ginger to sore muscles as needed.

BRUISE/BUMPS

Topical—Apply 2 to 4 drops of helichrysum, blue tansy, lavender, and/or frankincense to the bruise and surrounding area, several times daily (it is best to begin application directly after a blow that may cause a bruise).

BUNIONS

Topical—Apply 1 to 2 drops of lemon, wintergreen, and pine to the bunion, several times daily.

BURNS

Other—Cool the area in cold water for several minutes. Do not use ice.

Topical—Apply 2 to 3 drops of lavender, melaleuca (tea tree), or German chamomile to the burn every 15 minutes until pain subsides, and then apply every two hours or as necessary until healing is complete.

BURSITIS

Topical—Apply 2 to 4 drops each of wintergreen, balsam fir, and cypress to affected area, 3 to 5 times daily.

CALCIFIC TENDINITIS

Topical—Apply 2 drops each of cypress, balsam fir, eucalyptus, and wintergreen and 1 drop each of grapefruit, lemongrass, and lemon to and widely around the affected area, 2 to 3 times daily.

Oral—For difficult calcification, take a capsule filled with 8 drops of lemon, 2 drops each of frankincense and balsam fir, and 1 drop of wintergreen, 1 to 2 times daily.

CALLUSES

Topical—Apply 1 to 2 drops of oregano, lavender, or frankincense to the area, 2 to 3 times daily.

CANCER (ENRICHED FRANKINCENSE, AND DISCLAIMER)

Both H.K. Lin, PhD, and Mahmoud Suhail, MD—who have extensive experience working with frankincense and cancer—recommend using “enriched” *Boswellia sacra* for cancer. Enriched frankincense is simply frankincense bottles that have been left open to allow the lighter chemical compounds to evaporate out, leaving the heavier chemical compounds. The bottle is allowed to evaporate until only 20 percent of the oil remains. According to Dr. Lin, this makes *Boswellia sacra* 10 times more potent. Because cancer is a devastating disease, aggressive action is often necessary to correct it. Large oral doses are frequently suggested and may be difficult to take immediately; therefore, it is prudent to work up to the recommended dosage to allow the body to adjust. You may start with 1 quarter of the dosage, then work to half, and then to the full dose over a period of several days to a couple weeks. The same applies for orange oil when indicated. The average essential oil contains from 20 to 40 drops of essential oil per 1 mL. This figure can be used as a guide for dosing, but oils vary significantly based on their specific gravity, so it is not perfect. In general, 30 drops per milliliter is a good average.

Disclaimer: Cancer is one of the most common life-threatening illnesses that affects up to half of us during our lifetime. You should never attempt to treat it alone. Ideally you will work closely with your physician and determine the best course of action that will lead you to healing. This partnership provides the greatest possibility of successful treatment and survival.

CANCER (BLADDER)

Oral—Take 0.018 to 0.045 ml of enriched frankincense or frankincense per pound of body weight (for example, a 150-pound person would take 2.7 to 6.75 ml daily) in 3 to 6 divided doses throughout the day with food for 21 days, then rest for 7 days, and restart regimen if necessary. Take a capsule with 15 drops of orange oil, 3 to 6 times daily. Take an additional capsule with 10 drops of sandalwood oil, 2 times daily.

Other—Intermittent fasting (only consuming water) for 24 hours, 2 times weekly, or 48 hours once weekly. Alternately, some practitioners recommend fasting for 30-plus days drinking only vegetable

and fruit juices. Make sure they don't have added sugar.

Topical—Apply 3 to 5 drops each of sandalwood, basil, and orange to the affected area up to 6 times daily.

CANCER (BONE)

Oral—Take 0.018 to 0.045 ml of enriched frankincense or frankincense per pound of body weight (for example, a 150-pound person would take 2.7 to 6.75 ml daily) in 3 to 6 divided doses throughout the day with food for 21 days, then rest for 7 days, and restart regimen if necessary. Take a capsule with 15 drops of orange oil, 3 to 6 times daily. Take an additional capsule with 10 drops of clove oil, 2 times daily.

Other—Intermittent fasting (only consuming water) for 24 hours, 2 times weekly, or 48 hours once weekly. Alternately, some practitioners recommend fasting for 30-plus days drinking only vegetable and fruit juices. Make sure they don't have added sugar.

Topical—Apply 3 to 5 drops each of clove, tsuga, and frankincense over the bladder area up to 6 times daily.

CANCER (BRAIN)

Topical—Apply 1 to 3 drops each of lemongrass, lemon, oregano, German chamomile, and thyme to the base of the skull and behind the ears, 3 to 6 times daily.

Oral—Take 0.018 to 0.045 ml of enriched frankincense or frankincense per pound of body weight (for example, a 150-pound person would take 2.7 to 6.75 ml daily) in 3 to 6 divided doses throughout the day with food for 21 days, then rest for 7 days, and restart regimen if necessary. Take 0.02 to 0.067 ml (about 3 to 10 ml for a 150-pound person) of orange per pound of body weight in 3 divided doses with food daily for 21 days, then rest for 7 days, and restart regimen if necessary.

Other—Intermittent fasting (only consuming water) for 24 hours, 2 times weekly, or 48 hours once weekly. Alternately, some practitioners recommend fasting for 30-plus days drinking only vegetable and fruit juices. Make sure they don't have added sugar.

CANCER (BREAST)

Topical—Rub copious amounts of frankincense, sandalwood, myrrh, blue spruce, and myrtle on breasts, several times daily.

Oral—Take 0.018 to 0.045 ml of enriched frankincense or frankincense per pound of body weight (for example, a 150-pound person would take 2.7 to 6.75 ml daily) in 3 to 6 divided doses throughout the day with food for 21 days, then rest for 7 days, and restart regimen if necessary. Take 0.02 to 0.067 ml (about 3 to 10 ml for a 150-pound person) of orange per pound of body weight in 3 divided doses with food daily for 21 days, then rest for 7 days, and restart regimen if necessary.

Other—Intermittent fasting (only consuming water) for 24 hours, 2 times weekly, or 48 hours once weekly. Alternately, some practitioners recommend fasting for 30-plus days drinking only vegetable and fruit juices. Make sure they don't have added sugar.

CANCER (CERVICAL)

Topical—Apply copious amounts of frankincense and tsuga over the pubic area, several times daily.

Oral—Take 0.018 to 0.045 ml of enriched frankincense or frankincense per pound of body weight (for example, a 150-pound person would take 2.7 to 6.75 ml daily) in 3 to 6 divided doses throughout the day with food for 21 days, then rest for 7 days, and restart regimen if necessary. Take 0.02 to 0.067 ml (about 3 to 10 ml for a 150-pound person) of orange per pound of body weight in 3 divided

doses with food daily for 21 days, then rest for 7 days, and restart regimen if necessary.

Retention—Consider inserting 15 drops of frankincense and 5 drops of tsuga mixed with 1 tablespoon of carrier oil into the vagina on a tampon.

Other—Intermittent fasting (only consuming water) for 24 hours, 2 times weekly, or 48 hours once weekly. Alternately, some practitioners recommend fasting for 30-plus days drinking only vegetable and fruit juices. Make sure they don't have added sugar.

CANCER (COLON)

Topical—Apply copious amounts of frankincense and sandalwood over the lower abdomen, several times daily.

Oral—Take 0.018 to 0.045 ml of enriched frankincense or frankincense per pound of body weight (for example, a 150-pound person would take 2.7 to 6.75 ml daily) in 3 to 6 divided doses throughout the day with food for 21 days, then rest for 7 days, and restart regimen if necessary. Take 0.02 to 0.067 ml (about 3 to 10 ml for a 150-pound person) of orange per pound of body weight in 3 divided doses with food daily for 21 days, then rest for 7 days, and restart regimen if necessary.

Retention—Consider inserting 10 drops each of frankincense and sandalwood mixed with 30 to 50 drops of carrier oil into the rectum and retaining.

Other—Intermittent fasting (only consuming water) for 24 hours, 2 times weekly, or 48 hours once weekly; alternately, some practitioners recommend fasting for 30-plus days drinking only vegetable and fruit juices. Make sure they don't have added sugar.

CANCER (GASTRIC, STOMACH)

Topical—Apply copious amounts of frankincense and sandalwood over the lower abdomen, several times daily.

Oral—Take 1 capsule filled with 5 to 10 drops of each listed oil—frankincense, clove, rosemary, ginger, and 2 drops of nutmeg—3 times daily for 21 days, then rest for 7 days, and restart regimen if necessary. Take 1 capsule with 5 drops each of lemongrass, basil, and cinnamon, once daily. Take 0.02 to 0.067 ml (about 3 to 10 ml for a 150-pound person) of orange per pound of body weight in 3 divided doses with food daily. If stomach irritation occurs, apply the oils topically over the stomach instead.

Other—Intermittent fasting (only consuming water) for 24 hours, 2 times weekly, or 48 hours once weekly. Alternately, some practitioners recommend fasting for 30-plus days drinking only vegetable and fruit juices. Make sure they don't have added sugar.

CANCER (LUNG)

Topical—Apply copious amounts of frankincense, myrrh, and orange to the front and back of the ribs several times daily.

Oral—Take 0.018 to 0.045 ml of enriched frankincense or frankincense per pound of body weight (for example, a 150-pound person would take 2.7 to 6.75 ml daily) in 3 to 6 divided doses throughout the day with food for 21 days, then rest for 7 days, and restart regimen if necessary. Take 0.02 to 0.067 ml (about 3 to 10 ml for a 150-pound person) of orange per pound of body weight in 3 divided doses with food daily for 21 days, then rest for 7 days, and restart regimen if necessary.

Inhalation—Place 15 drops each of myrtle and eucalyptus in 3 inches of hot water that is not too hot to touch with your hand and cover head with towel to inhale every 2 hours.

Other—Intermittent fasting (only consuming water) for 24 hours, 2 times weekly, or 48 hours once weekly. Alternately, some practitioners recommend fasting for 30-plus days drinking only vegetable

and fruit juices. Make sure they don't have added sugar.

CANCER (ORAL)

Oral—First thing in the morning and on an empty stomach, add 2 drops each of clove, oregano, thyme and frankincense to 1 tablespoon of coconut oil; hold this mixture in the mouth and agitate regularly for 10 to 15 minutes—or until the oil thickens—then spit out (*DO NOT SWALLOW* as this procedure may pull toxins from the oral cavity). Repeat this procedure up to 3 times daily on an empty stomach. Take 0.018 to 0.045 ml of enriched frankincense or frankincense per pound of body weight (for example, a 150-pound person would take 2.7 to 6.75 ml daily) in 3 to 6 divided doses throughout the day with food for 21 days, then rest for 7 days and restart regimen if necessary; take 0.02 to 0.067 ml (about 3 to 10 ml for a 150-pound person) of orange per pound of body weight in 3 divided doses with food daily for 21 days, then rest for 7 days, and restart regimen if necessary.

Other—Intermittent fasting (only consuming water) for 24 hours, 2 times weekly, or 48 hours once weekly; alternately, some practitioners recommend fasting for 30-plus days drinking only vegetable and fruit juices. Make sure they don't have added sugar.

CANCER (OVARIAN)

Topical—Heavily dilute and apply 2 to 4 drops each of thyme, sandalwood, frankincense, geranium, and cypress to the lower abdominal region area, 3 to 5 times daily.

Oral—Take 0.018 to 0.045 ml of enriched frankincense or frankincense per pound of body weight (for example, a 150-pound person would take 2.7 to 6.75 ml daily) in 3 to 6 divided doses throughout the day with food for 21 days, then rest for 7 days, and restart regimen if necessary. Take 0.02 to 0.067 ml (about 3 to 10 ml for a 150-pound person) of orange per pound of body weight in 3 divided doses with food daily for 21 days, then rest for 7 days, and restart regimen if necessary.

Other—Intermittent fasting (only consuming water) for 24 hours, 2 times weekly or 48 hours once weekly. Alternately, some practitioners recommend fasting for 30-plus days drinking only vegetable and fruit juices. Make sure they don't have added sugar.

CANCER (PANCREATIC)

Topical—Apply copious amounts of frankincense, myrrh, and orange to the middle part of the left side of the back several times daily.

Oral—Take 0.018 to 0.045 ml of enriched frankincense or frankincense per pound of body weight (for example, a 150-pound person would take 2.7 to 6.75 ml daily) in 3 to 6 divided doses throughout the day with food for 21 days, then rest for 7 days, and restart regimen if necessary. Take 0.02 to 0.067 ml (about 3 to 10 ml for a 150-pound person) of orange per pound of body weight in 3 divided doses with food daily for 21 days, then rest for 7 days, and restart regimen if necessary.

Other—Intermittent fasting (only consuming water) for 24 hours, 2 times weekly, or 48 hours once weekly. Alternately, some practitioners recommend fasting for 30-plus days drinking only vegetable and fruit juices. Make sure they don't have added sugar.

CANCER (PROSTATE)

Topical—Apply copious amounts of frankincense, sandalwood, and myrrh over the lower abdomen several times daily.

Oral—Take 0.018 to 0.045 ml of enriched frankincense or frankincense per pound of body weight (for example, a 150-pound person would take 2.7 to 6.75 ml daily) in 3 to 6 divided doses throughout the day with food for 21 days, then rest for 7 days, and restart regimen if necessary. Take .067 ml

(about 10 ml for a 150-pound person) of orange per pound of body weight in 3 divided doses with food daily for 21 days, then rest for 7 days, and restart regimen if necessary.

Retention—Consider inserting 10 drops each of frankincense and sandalwood mixed with 1 tablespoon drops of carrier oil into the rectum and retaining.

Other—Intermittent fasting (only consuming water) for 24 hours, 2 times weekly, or 48 hours once weekly. Alternately, some practitioners recommend fasting for 30-plus days drinking only vegetable and fruit juices. Make sure they don't have added sugar.

CANCER (SKIN)

Topical—Apply copious amounts of frankincense, melaleuca (tea tree), and 1 of the following: balsam fir or sandalwood to affected area several times daily

Oral—Take 0.018 to 0.045 ml of enriched frankincense or frankincense per pound of body weight (for example a 150-pound person would take 2.7 to 6.75 ml daily) in 3 to 6 divided doses throughout the day with food for 21 days, then rest for 7 days, and restart regimen if necessary. Take .067 ml (about 10 ml for a 150-pound person) of orange per pound of body weight in 3 divided doses with food daily for 21 days, then rest for 7 days, and restart regimen if necessary.

Other—Intermittent fasting (only consuming water) for 24 hours, 2 times weekly, or 48 hours once weekly. Alternately, some practitioners recommend fasting for 30-plus days drinking only vegetable and fruit juices. Make sure they don't have added sugar.

CANCER (TESTICULAR)

Topical—Mix 10 drops each of frankincense and blue spruce in 2 teaspoons of carrier oil and apply to the testicles, 2 times daily.

Oral—Take 0.018 to 0.045 ml of enriched frankincense or frankincense per pound of body weight (for example, a 150-pound person would take 2.7 to 6.75 ml daily) in 3 to 6 divided doses throughout the day with food for 21 days, then rest for 7 days, and restart regimen if necessary. Take 0.02 to 0.067 ml (about 3 to 10 ml for a 150-pound person) of orange per pound of body weight in 3 divided doses with food daily for 21 days, then rest for 7 days, and restart regimen if necessary.

Other—Intermittent fasting (only consuming water) for 24 hours, 2 times weekly, or 48 hours once weekly. Alternately, some practitioners recommend fasting for 30-plus days drinking only vegetable and fruit juices. Make sure they don't have added sugar.

CANCER (THYROID)

Topical—Apply 1 drop each of frankincense, balsam fir, myrtle, German chamomile, and nutmeg to the neck over the thyroid, 3 to 6 times daily.

Oral—Take 0.018 to 0.045 ml of enriched frankincense or frankincense per pound of body weight (for example, a 150-pound person would take 2.7 to 6.75 ml daily) in 3 to 6 divided doses throughout the day with food for 21 days, then rest for 7 days, and restart regimen if necessary. Take 0.02 to 0.067 ml (about 3 to 10 ml for a 150-pound person) of orange per pound of body weight in 3 divided doses with food daily for 21 days, then rest for 7 days, and restart regimen if necessary.

Other—Intermittent fasting (only consuming water) for 24 hours, 2 times weekly, or 48 hours once weekly. Alternately, some practitioners recommend fasting for 30-plus days drinking only vegetable and fruit juices. Make sure they don't have added sugar.

CANCER (UTERINE)

Topical—Heavily dilute and apply 2 to 4 drops each of thyme, sandalwood, frankincense, geranium,

and cypress to the lower abdominal region area, 3 to 5 times daily.

Oral—Take 0.018 to 0.045 ml of enriched frankincense or frankincense per pound of body weight (for example, a 150-pound person would take 2.7 to 6.75 ml daily) in 3 to 6 divided doses throughout the day with food for 21 days, then rest for 7 days, and restart regimen if necessary. Take 0.02 to 0.067 ml (about 3 to 10 ml for a 150-pound person) of orange per pound of body weight in 3 divided doses with food daily for 21 days, then rest for 7 days, and restart regimen if necessary.

Other—Intermittent fasting (only consuming water) for 24 hours, 2 times weekly or 48 hours once weekly. Alternately, some practitioners recommend fasting for 30-plus days drinking only vegetable and fruit juices. Make sure they don't have added sugar.

CANCER (VAGINAL, VULVAR)

Topical—Heavily dilute and apply 2 to 4 drops each of sandalwood, frankincense, geranium, and cypress to the vulva and labia area, 3 to 5 times daily. Apply 8 to 10 drops of orange oil to the bottoms of the feet, 2 to 3 times daily. Apply more geranium and helichrysum as the area begins to heal to prevent scarring.

Oral—Take 0.018 to 0.045 ml of enriched frankincense or frankincense per pound of body weight (for example, a 150-pound person would take 2.7 to 6.75 ml daily) in 3 to 6 divided doses throughout the day with food for 21 days.

Other—Intermittent fasting (only consuming water) for 24 hours, 2 times weekly, or 48 hours once weekly. Alternately, some practitioners recommend fasting for 30-plus days drinking only vegetable and fruit juices. Make sure they don't have added sugar.

CANDIDA

Topical—Apply 1 to 3 drops each of lemongrass, clove, eucalyptus, lavender, and melaleuca (tea tree) to the bottoms of the feet, 2 times daily.

Oral—Take 3 drops each of oregano, lemongrass, lavender, and lemon in a capsule, 3 times daily.

CANKER SORES

Topical—Apply 1 drop of 1 or more of clove, lemon, melaleuca (tea tree), and/or peppermint directly to the canker sore several times daily. Rotating which oils are used will increase effectiveness.

CARPAL TUNNEL SYNDROME

Topical—Apply a combination of lemongrass, marjoram, peppermint, cypress, and wintergreen to affected area, several times daily.

Oral—For added support, take a capsule filled with 4 drops each of frankincense, copaiba, balsam fir, and lemongrass, 2 to 3 times daily.

CATARACTS

Topical—Apply lemongrass, frankincense, and lavender mixed with a little carrier oil widely around the orbit of the eye at night before going to bed.

Oral—Take 1 capsule filled with 5 drops each of frankincense, lavender, and lemongrass, 2 times daily.

CAVITIES

See your dentist to repair the cavity.

Topical—Apply clove and cinnamon oil to tooth (may require dilution), 3 times daily.

CELIAC DISEASE

Oral—Take a capsule filled with 4 drops of lemon, and ginger, and 1 drop each of cinnamon, grapefruit, fennel, and peppermint, 3 times daily, preferably before each meal.

CELLULITIS

Topical—Apply 1 drop each of helichrysum, lavender, melaleuca (tea tree), eucalyptus, and thyme to the affected area, 2 to 3 times daily.

CHAPPED SKIN

Topical—Apply 2 to 3 drops of lavender and/or myrrh and German chamomile to affected area as often as needed.

CHARCOT FOOT (NEUROPATHIC ARTHROPATHY)

Topical—Apply 8 to 10 drops of orange oil to the bottoms of the feet, 2 times daily. Massage 4 drops each of blue spruce, cypress, balsam fir, and vetiver to the top of the feet, 2 to 4 times daily. For wounds, apply 1 to 2 drops each of frankincense, copaiba, cedarwood, and lavender to the wound, several times daily.

CHERRY ANGIOMA

Topical—Apply a few drops of a mixture containing equal portions of frankincense, cistus, lemongrass, German chamomile, lavender, and orange in 4 teaspoons of carrier oil to the affected area, several times daily.

Oral —Take a capsule filled with 5 drops each of frankincense, lemongrass, and orange, 2 to 3 times daily.

CHICKEN POX

Topical—Mix 5 drops each of melaleuca (tea tree), lavender, lemongrass, and German chamomile with equal parts carrier oil and apply to spots, 3 times daily.

Oral—Take a capsule with 3 drops each of lemongrass, oregano, and lemon, 2 to 3 times daily.

CHILBLAINS

Topical—Apply 1 drop each of German chamomile, lavender, and cypress to the affected area, 1 to 3 times daily. Alternately, add 1 drop of each to each application of lotion.

CHOLERA

Oral—Take a capsule filled with 3 drops each of oregano and cinnamon, and 1 drop each of eucalyptus, melaleuca (tea tree), and thyme up to 4 times daily.

Other—Drink plenty of water with electrolytes to replenish what has been lost through diarrhea.

CHRONIC FATIGUE

Topical—Apply frankincense, sandalwood, and cedarwood to the base of the skull, brain stem, and head, 2 to 4 times daily.

Inhalation—Place 2 drops of peppermint in 1 palm, rub together with other palm, and cup over nose and mouth to inhale as often as necessary.

Oral—Take a capsule filled with 3 drops each of lemongrass, myrrh, and German chamomile, 2 times

daily.

CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)

Topical—Apply 3 to 5 drops of eucalyptus, myrtle, cedarwood, peppermint and/or copaiba to the chest as needed. Apply 3 to 5 drops each of oregano and 1 drop of thyme to the bottoms of the feet, 2 to 4 times daily.

Inhalation—Place 1 to 2 drops of eucalyptus, rosemary, myrtle, and peppermint in 3 inches of hot water that is not too hot to touch with your hand, and cover head with towel to inhale, 1 or 2 times daily.

Oral—Take 1 capsule filled with 2 drops each of pine, orange, lemon, eucalyptus, and ginger up to 3 times daily.

CIRCULATION, POOR

Topical—Apply 1 to 2 drops each of cypress, helichrysum, and cedarwood to the area of poor circulation, 3 to 5 times daily.

Oral—Take a capsule filled with 3 drops each of lemongrass, cypress, clove, and cinnamon, morning and evening.

CLOSTRIDIUM DIFFICILE INFECTION (C. Diff)

Oral—Take a capsule filled with 4 drops each of clove, cinnamon, and lemongrass, 1 to 3 times daily.

Retention—Dilute 1 drop each of clove, cinnamon, lemongrass in 2 tablespoons of carrier oil and insert into the rectum. Retain for as long as possible and repeat the procedure up to 2 times daily.

COLD

Topical—During early onset of cold, apply 2 drops each of eucalyptus, melaleuca (tea tree), and lemon to the chest and neck every 15 to 30 minutes for the first 4 hours. Apply 1 to 2 drops each of cinnamon, oregano, clove, lemon, and eucalyptus to the bottom of the feet as often as every 2 hours thereafter until symptoms subside.

Inhalation—Place 1 drop of eucalyptus or melaleuca (tea tree) under the nose, and rub 2 drops of each on the upper chest.

Oral—At the first signs of cold, drop 1 drop of melaleuca (tea tree) under the tongue every 15 minutes for the first hour, swishing it around your mouth and at the back of the throat for 2 to 3 minutes. Take 1 capsule filled with 2 drops each of clove, oregano, lemon, cinnamon, and 1 drop of eucalyptus, 2 to 3 times daily thereafter.

COLD SORES

Topical—Apply a mixture of clove, lemon, melaleuca (tea tree), and peppermint directly to the cold sore, several times daily.

COLITIS, ULCERATIVE

Oral—Take a capsule filled with 2 drops each of fennel, copaiba, peppermint, German chamomile, geranium, and ginger, 3 times daily.

Topical—Apply peppermint, winter-green, or fennel on the lower abdomen, 2 to 4 times daily.

COMPARTMENT SYNDROME

Permanent damage or disability may occur if pressure is not relieved quickly. Only use this

protocol in conjunction with Western medical options and with approval from a physician.

Topical—Apply 1 to 2 drops each of cypress, helichrysum, lemongrass, grapefruit, lemon, wintergreen, cistus and cypress to affected area, 2 to 4 times daily.

Oral—Take a capsule filled with 1 to 3 drops each of grapefruit, lemon, and lemongrass, 1 to 3 times daily.

COMPLEX REGIONAL PAIN SYNDROME (REFLEX SYMPATHETIC DYSTROPHY SYNDROME)

Topical—Apply 2 drops each of frankincense, vetiver, helichrysum, and geranium to the spine, 1 to 2 times daily. Apply 1 to 2 drops each of lavender, balsam fir, helichrysum, copaiba, and peppermint to areas of discomfort, 2 to 4 times daily.

Oral—Take a capsule filled with 3 drops each of frankincense, copaiba, balsam fir and vetiver, and 2 drops of helichrysum 1 to 3 times daily.

CONCUSSION

Anyone with a concussion should be assessed by a physician.

Topical—Apply 2 drops each of frankincense, vetiver, and sandalwood to brain stem and head, 1 to 3 times daily.

Oral—Take a few drops each of frankincense and peppermint internally, 1 to 3 times daily.

CONGESTION (SINUS)

Topical—Apply eucalyptus, peppermint, or blue spruce to the cheeks, nose, chest, and upper back as often as needed.

Inhalation—Place 6 to 10 drops each of eucalyptus and peppermint in a boiling pot of water, cover head and bowl with towel to inhale.

CONJUNCTIVITIS (PINK EYE)

Topical—Apply lavender, melaleuca (tea tree), or frankincense in a wide circle around both eyes, several times daily. Apply 1 drop of lavender to palm and cup over eye for 5 minutes.

Oral—Take 1 capsule filled with 2 drops each of clove, oregano, lemon, cinnamon, and 1 drop of eucalyptus, 2 to 3 times daily.

CONSTIPATION

Oral—Take a capsule with 2 drops each of juniper, ginger, and lemon, 1 to 3 times daily, or until constipation is relieved.

Topical—Apply 1 drop each of lemon and ginger over the abdomen, 1 to 3 times daily, or until constipation is relieved.

Other—Sit on a chair and bring your knees to your chest, 1 leg at a time, 25 to 50 times each leg.

CONVULSIONS

A person who experiences a convulsion should have further evaluation by medical professionals to determine the cause.

Topical—Apply 3 to 5 drops of frankincense, copaiba, or a mixture of lemon and orange to the base of the skull, across the neck, and the upper part of the spine.

CORNS

Topical—Apply 1 to 2 drops of clove, oregano, frankincense, or grapefruit to the corn, several times daily.

COUGH

Topical—Massage 1 to 2 drops each of eucalyptus, myrtle, cedarwood, and peppermint into the chest and upper back, several times daily; cover chest with a warm, wet rag following application.

Oral—Take a capsule with 3 drops each of oregano, cinnamon, myrrh, and lemon, 2 to 3 times daily. Create a cough syrup by adding 5 drops each of lemon and melaleuca (tea tree) and 3 drops each of thyme and peppermint to 1 cup of pure maple, yacon, or raw honey (must be 13 months or older for honey) and give 1 teaspoon of this mixture, 4 to 6 times daily.

Inhalation—Place 6 to 10 drops each of eucalyptus and peppermint in a boiling pot of water. Cover head and bowl with towel to inhale. For young children, use cedarwood and myrtle instead.

CRAMPS, MUSCLE

Topical—Massage 2 to 4 drops of peppermint, copaiba, basil, rosemary, and/or lemongrass on the muscle, several times daily.

Oral—Take peppermint and lemongrass internally, 2 to 3 times daily.

CRAMP-FASCICULATIONS SYNDROME

Topical—Apply 1 to 2 drops each of geranium, vetiver, basil, lavender, peppermint, and marjoram to the affected area(s), 2 to 4 times daily.

Oral—Take a capsule filled with 3 drops each of frankincense, vetiver, lavender, and orange, 1 to 3 times daily.

CROHN'S DISEASE

Oral—Take a capsule filled with 2 drops each of fennel, copaiba, peppermint, German chamomile, geranium, and ginger, 3 times daily.

Topical—Apply 1 drop each of peppermint, ginger, and fennel on the lower abdomen, 2 to 4 times daily.

CROUP

Topical—Massage 1 to 2 drops each of eucalyptus (lavender for children under age 5), marjoram, or myrtle onto the chest and upper back, several times daily; cover chest with a warm wet rag following application. Apply oregano, lemon, and lavender to the bottom of the feet every 1 to 3 hours.

Oral—Adults take 1 capsule filled with 1 to 3 drops each of oregano, cinnamon, myrrh, and lemon, 2 to 3 times daily.

Inhalation—Place 2 to 3 drops each of eucalyptus, myrtle, marjoram, and/or peppermint in a boiling pot of water, cover head and bowl with towel to inhale.

CRYPTOSPORIDIOSIS

Oral—Take a capsule filled with 3 drops each of cinnamon, lemongrass, oregano, peppermint, and lemon, 1 to 2 times daily.

Retention—For difficult cases, consider mixing 2 drops each of oregano, lemon, and eucalyptus in 1 tablespoon of carrier oil and retain in rectum for up to 8 hours; repeat, 2 times daily.

CUTS/SCRAPES

Topical—Apply 1 to 4 drops of a mixture of lemongrass, melaleuca (tea tree), and eucalyptus to the

area as an antiseptic every 4 hours. Apply 1 to 3 drops lavender and/or frankincense to the area to promote healing every 2 to 4 hours.

CYST (GANGLION)

Topical—Apply 1 to 2 drops of oregano, thyme, or frankincense to the area, 1 to 3 times daily.

CYST (SPLENIC)

A splenic cyst should be evaluated by a physician as rare complications like hemorrhage, rupture, and infection may occur.

Oral—Take 5 drops of oregano, 2 drops each of frankincense, lemon, geranium, grapefruit, and sandalwood in a capsule, 1 to 3 times daily.

Topical—Apply 2 to 3 drops each of oregano, thyme, frankincense, and orange under the left breast to the bottom of the rib cage near the edge of the torso, 2 to 3 times daily.

CYSTITIS

[See URINARY TRACT INFECTION](#)

DANDRUFF

Topical—Mix 2 drops each of melaleuca (tea tree), rosemary, lavender, cedarwood, and basil in a carrier oil and massage into scalp and leave in for 1 hour; wash out with a natural shampoo and/or mild water after 1 hour.

DARIER DISEASE (KARATOSIS FOLLICULARIS)

Topical—Mix 1 drop each of lavender, melaleuca (tea tree), frankincense, oregano, lemongrass, and German chamomile in 1 tablespoon of coconut oil and apply to affected area, 1 to 3 times daily.

DENGUE FEVER

[See YELLOW FEVER](#)

DENTAL FILLING, LOST

This is meant to be performed while waiting to see the dentist to replace the lost filling.

Topical—Mix together a small amount of beeswax or zinc oxide powder (you can also purchase dental wax or compound) with 2 drops of clove oil and place in tooth where filling fell out.

DENTAL INFECTION

Topical—Apply 1 drop of clove, myrrh, thyme, or oregano diluted to gums and teeth, 2 to 3 times daily.

DEPRESSION

Do not quit antidepressant medications without the express consent of your doctor. Use this protocol in conjunction with Western medical options and with approval from a physician.

Topical—Apply frankincense or ylang ylang to heart center, 3 to 5 times daily. Apply a mixture of up to 10 drops of citrus oils to a place that won't be exposed to the sun, 1 to 3 times daily.

Inhalation—Apply 2 drops each of lemon and orange to 1 palm, rub together, and cup hands over mouth and nose to inhale as often as needed.

DERMATITIS

Other—Wash affected skin with a mixture of cool to lukewarm water and 1 tablespoon of sea salt or baking soda (this can sting—like pouring salt in a wound). Some essential oils and carrier oils will exacerbate chronic skin conditions. If this occurs, consider applying homeopathic calendula or cardiospermum instead.

Topical—After washing skin as indicated above, mix together 2 tablespoons of olive oil and 1 drop each of geranium, lavender, frankincense, German chamomile, blue tansy, and melaleuca (tea tree) and gently apply to irritated area up to 3 times daily.

DERMATITIS (SEBORRHEIC)

Other—In a large bowl, mix together several cups of water and up to 1 cup of sea salt, thoroughly wash hair, scalp, and other irritated areas with this mixture, 1 to 2 times daily (this can sting—like pouring salt in a wound).

Topical—Apply a mixture of 2 tablespoons of olive oil and 1 to 2 drops each of geranium, lavender, frankincense, German chamomile, blue tansy, and melaleuca (tea tree) to the scalp, leave in place for at least 20 minutes and up to overnight, and then shampoo hair and scalp with a natural shampoo.

DIABETES

Topical—Apply 1 to 3 drops each of cinnamon, lemongrass, fennel, and copaiba to the bottoms of the feet, particularly the pancreas VitaFlex point on the outer edge of the left foot about midway down, 2 to 4 times daily.

Oral—Take 1 capsule with 2 drops each of cinnamon, fennel, lemongrass, and grapefruit, morning and evening.

DIARRHEA

Oral—Take a capsule with 3 drops each of peppermint and fennel, 1 to 3 times daily, or until diarrhea is relieved.

Topical—Apply 1 to 3 drops of peppermint and fennel over the abdomen every hour or until diarrhea is relieved.

Other—Drink plenty of water to replenish lost fluids.

DISTAL RENAL TUBULAR ACIDOSIS

Oral—Take a capsule filled with 7 drops of lemon and 3 drops of juniper, 2 to 3 times daily.

Topical—Apply 2 to 3 drops of pine over the kidney area on the back, 3 times daily.

DIVERTICULITIS

Oral—Take 1 capsule filled with 2 drops each of oregano, peppermint, nutmeg, cypress, fennel, and marjoram, 2 to 3 times daily.

Topical—Apply oregano, peppermint, nutmeg, cypress, fennel, and marjoram over the abdomen, 2 to 3 times daily.

DIZZINESS

Inhalation—Place 1 drop each of peppermint and cypress in 1 palm, rub together with other palm, and cup hands over mouth and nose to inhale as often as necessary.

Topical—Apply peppermint, frankincense, or cypress to the temples, back of the neck and shoulders.

DOPAMINE DEFICIENCY

Topical—Apply 1 to 2 drops of geranium, eucalyptus, and clary sage behind and underneath the ears, 1 to 3 times daily.

Inhalation—Place 1 drop of geranium, lemon, and clary sage on a tissue and inhale as needed. Refresh tissue up to 3 times daily.

DRY SKIN

Topical—Apply lavender, myrrh, or German chamomile to affected area as often as needed.

DUPUYTREN'S CONTRACTURE

Topical—Massage 1 drop each of cistus, basil, marjoram, vetiver, and frankincense to the affected area several times daily.

DYSESTHESIA (CUTANEOUS)

Topical—Apply 1 drops each of vetiver, blue spruce, peppermint, juniper, German chamomile, and helichrysum to the area, 2 to 4 times daily.

Oral—Take a capsule with 5 drops of helichrysum and 2 drops each of vetiver, copaiba, and lavender, 1 to 3 times daily.

DYSENTERY

Seek medical attention if symptoms are severe or last longer than a few days.

Oral—Take 1 capsule with 4 drops each of peppermint, lemon, and oregano, 2 to 3 times daily.

Topical—Apply 1 to 3 drops of peppermint, wintergreen, fennel, or oregano to abdomen, 2 to 3 times daily.

EAR INFECTION

Topical—Apply 1 to 2 drops each of lavender and melaleuca (tea tree) around the ear and on the fleshy part of the ear every 30 minutes until pain subsides, and then apply every 2 hours. Apply 1 to 2 drops each of oregano, cinnamon, clove, rosemary, and lemon to the bottom of the feet every 30 minutes until pain subsides, and then every 2 to 4 hours for the next 24 hours.

Other—Apply 1 drop of melaleuca (tea tree) to a cotton ball and place inside ear, refresh every 30 minutes until pain diminishes, and then refresh every 2 hours; leave a fresh cotton ball in overnight.

EAR MITES

Topical—Apply 2 to 3 drops each of eucalyptus and melaleuca (tea tree) around the ear and on the fleshy part of the ear, 3 to 5 times daily.

Other—Apply 1 drop of melaleuca (tea tree) and eucalyptus to a cotton ball and place inside ear, and then refresh every hour; leave a fresh cotton ball in overnight.

EARACHE

Topical—Apply 1 to 2 drops each of peppermint and lavender around the ear and on the fleshy part of the ear every 30 minutes until pain subsides, and then apply every 2 hours. Apply 1 to 2 drops each of oregano, cinnamon, clove, rosemary or melaleuca (tea tree), and lemon to the bottom of the feet every 30 minutes until pain subsides, and then every 2 to 4 hours for the next 24 hours.

Other—Apply 1 drop of melaleuca (tea tree) to a cotton ball and place inside ear, refresh every 30 minutes until pain diminishes, and then refresh every 2 hours; leave a fresh cotton ball in overnight.

EATING DISORDER

(Anorexia & Bulimia)

Only use this protocol in conjunction with Western medical options and with approval from a physician.

Topical—Massage 2 drops each of orange, German chamomile, and ginger to the feet up to 3 times daily. Place 1 drop of frankincense on the crown of the head and behind the ears 3 times daily.

Inhalation—Put 1 drop each of orange and German chamomile on a tissue and inhale as needed throughout the day.

Oral—Take a capsule with 2 drops each of orange, German chamomile, and ginger, 1 to 3 times daily.

EBOLA VIRUS DISEASE

Ebola is life threatening. This protocol should only be used if no medical care or standard treatment is available.

Oral—Take a capsule filled with 4 drops each of cinnamon, clove, and oregano and 1 drop each of eucalyptus and melaleuca (tea tree), 2 to 3 times daily. Take a second capsule with 5 drops each of geranium and helichrysum for hemorrhaging state. If severe nausea or vomiting is occurring, take a capsule filled with 3 drops each of ginger, peppermint, and 1 drop of fennel 1 to 3 times daily.

Topical—Apply 5 drops of peppermint or lemon along the spine, 2 to 4 times daily for fever. Apply 5 drops each of cypress and helichrysum along the spine, 2 to 4 times daily for hemorrhaging.

Inhalation—Apply 1 to 2 drops of peppermint or ginger to your palms, rub together, and cup over your nose and mouth to inhale as needed for nausea.

ECTHYMA

Topical—Apply 1 to 2 drops each of thyme, melaleuca (tea tree), lemongrass, and lavender to the affected area, 2 to 4 times daily. Apply 1 drop each of lavender, cistus, and myrrh, 1 to 3 times daily as the area begins to heal.

Oral—Take 2 drops each of thyme, lemongrass, lavender, and cinnamon, 1 to 3 times daily.

ECZEMA

Topical—Apply a mixture of 2 to 3 drops each of lavender, frankincense, and melaleuca (tea tree) in 2 tablespoons of carrier oil to the affected area as often as needed. Lemon oil may also be beneficial, but you must avoid sun exposure where applied following application.

Other—Some essential oils and carrier oils will exacerbate chronic skin conditions. If this occurs, consider applying homeopathic calendula or cardiospermum instead.

EDEMA

Topical—Massage 2 to 3 drops each of lemongrass, grapefruit, lemon, and cypress in a teaspoon of carrier oil to affected area in strokes toward the heart, 1 to 3 times daily.

Oral—Take a capsule filled with 1 to 3 drops each of grapefruit, lemon, and lemongrass, 1 to 3 times daily.

Other—If swelling is in ankles or feet, keep feet elevated when sitting.

EHLERS-DANLOS SYNDROME

Topical—Apply 2 drops each of cypress, helichrysum, frankincense, rosemary, and vetiver to the long limbs and abdomen, 1 to 2 times daily. For pain, apply 3 drops each of eucalyptus, balsam fir,

peppermint, and wintergreen to areas of discomfort. Apply 5 to 10 drops of orange oil to the bottoms of the feet 3 times daily.

Oral—Take a capsule filled with 5 drops each of balsam fir, copaiba, and lavender, 1 to 2 times daily. Take an additional capsule with 3 drops each of ginger, frankincense, and peppermint, and 1 drop of fennel daily.

EMOTIONAL SHOCK

Topical—Apply 3 to 5 drops of frankincense, German chamomile, and/or lavender over the sternum, 2 to 3 times daily.

Inhalation—Apply 2 drops of lavender or German chamomile to 1 palm and rub palms together, cup hands over person's nose and mouth, and have them inhale.

ENDOMETRIOSIS

Retention—Mix 5 drops each of geranium, frankincense, melaleuca (tea tree), cypress, and rosemary in 1 ounce of carrier oil, apply to tampon, insert vaginally, and retain overnight.

Topical—Massage the abdomen with 3 drops each of rosemary, copaiba, lavender, and cypress and cover with a hot compress. Apply 3 to 5 drops of oregano, thyme, basil, cypress, wintergreen, marjoram, and peppermint (layered in that order, 1 at a time) to the spine and massage into back on either side of the spine, 2 times weekly.

Oral—Take a capsule filled with 10 drops of sandalwood and 5 drops of copaiba, 1 to 3 times daily.

Other: Consider a natural bioidentical progesterone.

ENTEROVIRUS

Only use this protocol in conjunction with Western medical options and with approval from a physician.

Topical—Apply 2 drops each of eucalyptus (preferably *Eucalyptus globulus*), rosemary, basil, and ginger to the chest and upper back and cover with a warm compress, 3 to 5 times daily. Apply 2 drops each of clove, oregano, cinnamon, and 1 drop of thyme to the bottoms of the feet, 2 to 4 times daily.

Oral—Take a capsule filled with 2 drops each of ginger, oregano, cinnamon, rosemary, and 1 drop each of eucalyptus and basil, 2 to 4 times daily.

Inhalation—Place 4 drops each of eucalyptus, rosemary, and basil 3 inches of hot water that is not too hot to touch with your hand, and cover head with towel to inhale every 2 hours.

EPIDIDYMITIS

Topical—Mix 5 drops each of frankincense and copaiba with 1 teaspoon of vegetable oil and apply to the scrotum, 1 to 3 times daily. Apply 2 drops each of helichrysum and geranium over the spleen 1 to 3 times daily. For shortness of breath, apply 2 to 4 drops of myrtle to the chest as often as needed.

Oral—Take 1 capsule filled with 2 drops each of clove, oregano, lemon, cinnamon, and 1 drop of eucalyptus, 2 to 3 times daily.

EOSINOPHILIC ESOPHAGITIS

Oral—Take 5 drops each of lemon and ginger in water, 2 to 4 times daily.

Topical—Apply 2 drops each of frankincense, ginger, lavender, and blue tansy externally to the throat area, 2 to 4 times daily.

EPILEPSY

Always try new essential oils with a companion that can offer help as certain essential oil aromas can trigger an epileptic reaction in those with epilepsy, even those not listed as triggers.

Oral—Take 1 capsule with 3 drops each of frankincense, cedarwood, lemongrass, and lavender, 1 to 3 times daily.

Inhalation—Place 2 to 3 drops of frankincense, cedarwood, or clary sage in 1 palm, rub palms together, and cup over nose and mouth to inhale. Add 4 to 6 drops of clary sage, frankincense, or cedarwood to 3 inches of hot water that is not too hot to touch with your hand, cover your head and the water with a towel over, and breathe deeply.

Other — See the list of oils to avoid in [Chapter 1](#)

EPSTEIN BARR

(MONONUCLEOSIS)

Oral—Take a capsule filled with 3 drops each of thyme, oregano, lemon, and cinnamon, 1 to 3 times daily. For sore throats, gargle with 1 to 2 drops each of lemon, peppermint, eucalyptus, and clove every 1 to 3 hours (mix with honey for better results) and swallow mixture.

Topical—Apply 2 drops each of eucalyptus and frankincense on the front of the neck. Apply 3 to 5 drops of oregano, thyme, basil, cypress, wintergreen, marjoram, and peppermint (layered in that order, 1 at a time) to the spine and massage into back on either side of the spine, 2 times weekly.

ERECTILE DYSFUNCTION

Oral—Take 3 to 5 drops of goldenrod under the tongue nightly. Take a capsule filled with 2 drops each of ginger, marjoram, rosemary, and cypress at least 1 hour before intercourse.

Topical—Apply 4 to 5 drops of blue spruce on each forearm daily. Dilute heavily and apply 1 drop each of cypress, goldenrod, helichrysum, and ginger around the base of the penis approximately 30 minutes before intercourse.

ESSENTIAL TREMORS

Topical—Apply 3 to 5 drops of oregano, thyme, basil, cypress, vetiver, marjoram, and peppermint (layered in that order, 1 at a time) to the spine and massage into back on either side of the spine once per week. Apply 1 drop each of vetiver, sandalwood, blue spruce and geranium behind the ears and at the base of the skull, 2 to 4 times daily.

EXHAUSTION

Topical—Apply one or a combination of peppermint, rosemary, and/or cypress to the bottoms of the feet and base of the skull, 2 to 4 times daily.

Inhalation—Place 2 to 3 drops of peppermint, rosemary, and/or cypress on palm and rub palms together, cup over nose and mouth, and breathe deeply as needed.

FAINTING

Inhalation—Put 2 to 3 drops of peppermint and or sandalwood in palms, rub together, and cup over nose and mouth to inhale until symptoms subside.

FATIGUE (PHYSICAL)

Inhalation—Place 2 to 3 drops of peppermint, rosemary, and/or lemongrass on palm and rub palms

together, cup over nose and mouth, and breathe deeply.

Topical—Apply 1 to 2 drops of peppermint, rosemary, and/or lemongrass to the temples, behind the ears, and over the sternum.

FATIGUE (MENTAL)

Inhalation—Place 2 to 3 drops of peppermint, frankincense, and/or balsam fir on palms, rub palms together, and cup over nose and mouth to inhale as needed.

Topical—Apply 2 to 4 drops of peppermint, frankincense, and/or balsam fir to the base of the skull, head, and neck as needed.

FEAR

Topical—Place 2 to 3 drops of ylang ylang and/or blue spruce to the temples, forehead, and bottoms of the feet as often as needed.

Inhalation—Place 2 to 3 drops of ylang ylang and blue spruce on palms, rub palms together, and cup over nose and mouth to inhale as needed.

FEVER

Topical—Apply peppermint or eucalyptus to the forehead, temples, back of neck, and tips of the ears as often as needed. For younger children, apply lavender or lemon on the spine; also apply lavender to the bottoms of the feet and back of the neck. Apply 1 to 2 drops each of cinnamon, lemon, eucalyptus, clove, and rosemary or melaleuca (tea tree) to the bottoms of the feet, 2 to 4 times daily to control any infection.

FIBROIDS

Topical—Apply frankincense, lavender, and/or cistus to the lower abdomen and back, 3 to 6 times daily; place a warm, wet towel over the back after application.

Inhalation—Place 1 drop of chosen oil under the nose, 2 to 3 times daily to inhale.

Oral—Take 1 capsule filled with 7 drops of frankincense and 3 drops each of lavender and cistus, 1 to 2 times daily.

FIBROMYALGIA

Topical—Apply 1 to 2 drops each of frankincense, vetiver, sandalwood, and cedarwood to the base of the skull, behind the ears, and top of the head 2 to 4 times daily; apply copaiba, wintergreen, and or balsam fir to areas of pain, 2 to 5 times daily.

Inhalation—Place 2 drops of peppermint in 1 palm, rub together with other palm, and cup over nose and mouth to inhale as often as necessary.

Oral—Take a capsule filled with 2 drops each of lemongrass, nutmeg, frankincense, myrrh, and German chamomile, 2 times daily.

FIFTH DISEASE

Topical—Apply 1 to 2 drops each of melaleuca (tea tree), thyme, lavender, and geranium to the affected area up to 3 times daily.

Oral—Take a capsule filled with 3 drops each of oregano, cinnamon, and lemon, and 1 drop each of eucalyptus and thyme, 1 to 3 times daily.

FLATULENCE

Oral—Take 1 capsule filled with 3 drops each of lemongrass, juniper, and peppermint, 1 to 3 times

daily.

Topical—Apply 1 to 2 drops of peppermint, lemongrass, and/or juniper to the lower abdomen, 1 to 3 times daily.

FLU (INFLUENZA)

Oral—Take a capsule filled with 3 drops of carrier oil and 2 drops each of clove, oregano and cinnamon and 1 drop of eucalyptus, 2 to 3 times daily.

Topical—Apply eucalyptus or myrtle to the chest several times daily, and cover with a warm, wet towel. Apply 2 drops each of oregano, eucalyptus, lemon and cinnamon to the bottoms of the feet every 1 to 3 hours.

FOOD INTOLERANCE

Oral—Apply 1 drop of peppermint on the tongue 2 to 4 times daily. Take 1 capsule with 2 drops each of lavender, lemongrass, ginger, and German chamomile, 1 to 3 times daily.

Topical—Apply 1 drop lavender under the nose and 1 to several drops on the feet.

FOOD POISONING

Oral—Take 1 capsule filled with 3 drops each of lemongrass, juniper, and peppermint, 1 to 3 times daily, or until symptoms are alleviated.

Topical—Apply 1 to 2 drops of peppermint, lemongrass, and/or juniper to the lower abdomen, 1 to 3 times daily.

FOX-FORDYCE DISEASE

Topical—Apply a mixture of 2 to 4 drops each of oregano, melaleuca (tea tree), and lavender in equal parts of carrier oil to the affected areas, 2 to 4 times daily. For the groin, dilute the mixture more heavily or omit oregano and apply the melaleuca (tea tree) and lavender only.

FRIEDREICH'S ATAXIA

Topical—Massage 2 to 3 drops each of pine, basil, lavender, and balsam fir along spine 2 to 4 times daily. Apply 1 to 2 drops each of marjoram, pine, lavender, and lemongrass to the major muscles, 1 to 3 times daily. Apply 1 to 2 drops of vetiver, geranium, frankincense, and sandalwood behind the ears, 2 to 4 times daily.

Oral—Take a capsule filled with 5 drops each of orange, frankincense, and vetiver, 1 to 3 times daily.

FROSTBITE

Topical—Create a warm compress by mixing 2 drops of thyme, cypress, and rosemary in warm water, then dip a cloth in the water, and wrap frostbitten area. Cover with plastic and a hot water bottle for 3 hours. Massage the area with 1 to 2 drops each of thyme, cypress, and rosemary to the area 3 to 5 times daily. For frostbitten feet soak the feet in warm water with 1 to 2 drops of each oil mixed in half a cup of Epsom salts (use coarse sea salt for diabetics).

FUNGAL INFECTION

Topical—Apply oregano, lemongrass, melaleuca (tea tree), and/or lavender to area, several times daily.

Oral—Take 1 capsule filled 3 drops each of lemongrass, oregano, and cinnamon, and 1 drop of eucalyptus, 2 to 3 times daily.

G6PD (GLUCOSE-6-PHOSPHATE DEHYDROGENASE DEFICIENCY)

Topical—Apply 1 to 2 drops each of lemon, clove, ginger, helichrysum, cypress, and frankincense to the spine and lower back, 3 to 5 times daily.

Other—Avoid the use of essential oils that contain camphor and menthol (rosemary, peppermint, camphor, blue tansy, cinnamon, and ocotea), though camphor, rosemary, and peppermint are the greatest concerns.

GALLBLADDER INFECTION/INFLAMMATION

Oral—Take 1 capsule filled with 5 drops each of lemon, juniper, and pine, 2 to 3 times daily.

Topical—Apply 2 to 3 drops each of peppermint, juniper, and German chamomile over the gallbladder area, 2 to 3 times daily.

GALLBLADDER STONES

(GALLSTONES)

Oral—Take 1 capsule filled with 4 drops each of lemon, juniper, grapefruit, and helichrysum, 1 to 3 times daily.

Topical—Apply 5 to 10 drops of peppermint, juniper, and German chamomile over the gallbladder area, 2 to 3 times daily.

GANGRENE

Topical—Apply 3 to 5 drops of lavender, myrrh, oregano, and thyme to affected area, several times daily.

Oral—Take 1 capsule filled with 3 drops of carrier oil and 2 drops each of clove, oregano, lemon, and cinnamon, 3 to 5 times daily.

GASTRITIS

Oral—Take a capsule filled with 3 drops each of peppermint, fennel, ginger, and lemongrass, 1 to 3 times daily.

Topical—Apply peppermint, lemongrass, and fennel to the stomach area as often as needed.

GASTROENTERITIS

(STOMACH FLU)

Oral—Take a capsule filled with 2 drops each of peppermint, ginger, clove, lemongrass, and oregano, 2 to 4 times daily.

Topical—Apply 1 drop each of peppermint, ginger, and/or juniper to abdomen (may require dilution) until symptoms subside.

Inhalation—Apply 1 drop each of ginger and peppermint to 1 palm, rub palms together, and inhale as often as needed.

GASTROESOPHAGEAL REFLUX DISEASE

(GERD, ACID REFLUX)

Oral—Take 3 drops each of lemon, orange, and ginger in water, 2 to 3 times daily. Alternately, take 2 drops of lemon sublingually.

GENITAL WARTS

Topical—Dilute oregano, thyme, or frankincense heavily and apply to warts, 1 to 3 times daily.

GIARDIA

Oral—Take a capsule filled with 3 drops each of peppermint, clove, and lavender, and 2 drops of thyme and basil, 1 to 3 times daily.

Topical—Apply 1 to 3 drops of lavender and peppermint over the stomach area, several times daily.

GINGIVITIS

Oral—Gargle with a mixture of 1 drop each of peppermint, vetiver, wintergreen, and clove, several times daily (do not swallow).

Topical—Apply 1 drop of clove on affected area, several times daily.

GLAUCOMA

Oral—Take 2 to 3 drops each of geranium, frankincense, and cypress in a capsule, 3 times daily.

Topical—Apply cypress or frankincense widely around the eye, 2 to 3 times daily.

GLIOBLASTOMA

Topical—Apply 3 to 5 drops each of lemongrass, oregano, German chamomile, and thyme to the base of the skull and behind the ears, 2 to 4 times daily.

Oral—Take 0.018 to 0.045 ml of enriched frankincense or frankincense per pound of body weight (for example, a 150-pound person would take 2.7 to 6.75 ml daily) in 3 divided doses throughout the day for 21 days. Take 0.02 to 0.067 ml (about 3 to 10 ml for a 150-pound person) of orange per pound of body weight in 3 divided doses daily for 21 days, then rest for 7 days, and restart regimen if necessary.

Other—Intermittent fasting (only consuming water) for 24 hours, 2 times weekly, or 48 hours once weekly. Alternately, some practitioners recommend fasting for 30-plus days drinking only vegetable and fruit juices. Make sure they don't have added sugar.

GOUT

Oral—Take a capsule filled with 4 drops each of juniper, lemon, lavender, and frankincense 1 to 3 times daily. As an alternative, take a capsule with 3 drops each of peppermint, juniper, pine, and lemon up to, 3 times daily.

Topical—Gently apply 1 to 3 drops each of frankincense and lavender to affected joints, several times daily.

GRANULOMA ANNULARE

Topical—Apply 1 drop each of melaleuca (tea tree), geranium, German chamomile, and lavender to the area, 1 to 3 times daily.

GRAVES' DISEASE

Oral—Take a capsule filled with 2 drops each of frankincense, myrrh, German chamomile, and clove, 1 to 3 times daily.

Topical—Apply 3 to 5 drops of oregano, thyme, basil, cypress, wintergreen, marjoram, and peppermint (layered in that order, 1 at a time) to the spine and massage into back on either side of the spine once per week.

GROWING PAINS

Topical—Apply 2 drops each of copaiba, balsam fir, lavender and cypress to the long bones of the body, 1 to 3 times daily.

GUILLAIN-BARRE SYNDROME

Topical—Apply 8 to 10 drops of orange oil to the bottoms of the feet, 2 times daily. Apply 1 to 2 drops each of vetiver, sandalwood, cypress, and frankincense behind the ears and at the base of the skull, 2 to 4 times daily. Apply 3 to 5 drops of oregano, thyme, basil, cypress, wintergreen, marjoram, and peppermint (layered in that order, 1 at a time) to the spine and massage into back on either side of the spine, 2 times per week.

Oral—Take a capsule filled with 3 drops each of German chamomile, lavender, frankincense, morning and evening.

GUM DISEASE

Oral—Gargle with a mixture of 1 drop each of peppermint, vetiver, wintergreen, and clove, several times daily (do not swallow).

Topical—Apply a mixture of clove, rosemary, lemon, and cinnamon to the gums, 2 to 4 times daily.

GYNECOMASTIA

Topical—Apply 1 to 2 drops each of lemon, grapefruit, cypress, and frankincense to the breasts up to 3 times daily.

HAIR LOSS

Topical—Mix 2 drops each of cedarwood, rosemary, cypress, and geranium in $\frac{1}{4}$ cup each of jojoba and coconut oil and massage mixture into the hair and scalp once daily. Alternately, add 1 drop of each oil with each shampoo or conditioner application (for best results use this daily). Alternately, add 5 drops of each essential oil to an 8 ounce bottle of shampoo or conditioner.

HAMMER TOE

Topical—Apply 1 to 2 drops each of lavender, frankincense, and black spruce to the toe, 1 to 3 times daily.

HANGOVER

Topical—Apply lavender and peppermint to the temples and back of the neck every 15 to 30 minutes until symptoms subside.

Oral—Take a capsule filled with 4 drops each of lemon, grapefruit, lavender, and peppermint, 1 to 2 times daily.

HASHIMOTO'S DISEASE

Oral—Take a capsule filled with 2 drops each of frankincense, myrrh, nutmeg, German chamomile, and clove, 1 to 3 times daily.

Topical—Apply 1 drop each of myrtle, sandalwood, frankincense, and peppermint over the thyroid area on the neck, 1 to 3 times daily. Apply 1 drop of myrtle on the tip of the big toe, morning and evening. Apply 8 to 10 drops of orange on the feet once daily, particularly massaging it into the thyroid Vita Flex area on the feet. Apply 3 to 5 drops of oregano, thyme, basil, cypress, wintergreen, marjoram, and peppermint (layered in that order, 1 at a time) to the spine and massage into back on either side of the spine, 2 times weekly.

HAY FEVER

Oral—Take 1 capsule with 5 drops each of lavender and German chamomile, 1 to 3 times daily. Alternately, take 1 capsule filled with 3 drops each of peppermint, lavender and lemon, 1 to 3 times

daily.

Inhalation—Apply lavender, eucalyptus, and peppermint to your palms, rub together, and cup over nose and mouth to inhale as often as needed.

HEAD LICE

Topical—Mix 4 drops eucalyptus and thyme and 2 drops each of melaleuca (tea tree), geranium, and lavender in 1 teaspoon of carrier oil and massage into scalp, let sit for 30 minutes, and rinse clean with 2 drops each of eucalyptus, lavender, geranium, and rosemary in 16 ounces of warm water. Repeat procedure every other day for at least 7 days.

HEADACHE

Topical—Apply peppermint, copaiba, and/or lavender to the temples, forehead, and back of the neck as often as needed.

Inhalation—Apply lavender, eucalyptus, and peppermint to your palms, rub together, and cup over nose and mouth to inhale as often as needed.

HEARING IMPAIRMENT

Topical—Apply a mixture of helichrysum, geranium, and lavender around the ear and on the fleshy part of the ear and then pull ear lobe in a circular motion 10 times to enhance absorption, 3 times daily.

Other—Apply 1 to 2 drops of helichrysum on a cotton ball and leave in overnight.

HEART ATTACK

Get professional medical attention as soon as possible.

Topical—Gently massage 1 drop each of marjoram, helichrysum, peppermint, rosemary, and ylang ylang to the heart area and to the sole of the left foot just below the toes every 10 minutes until symptoms subside.

Inhalation—Place 1 drop each of lavender, ylang ylang, and German chamomile on a tissue and have the person inhale as necessary.

HEART FAILURE

Get professional medical attention as soon as possible.

Topical—Apply 1 to 2 drops each of peppermint, rosemary, marjoram, lavender, and ylang ylang diluted in a teaspoon of carrier oil over the heart area of the chest, several times daily.

Other—For fluid retention see the [EDEMA](#) information.

HEART PALPITATIONS

Topical—Apply 2 to 4 drops of ylang ylang, goldenrod, and/or rosemary on the chest, morning and night.

Inhalation—Apply lavender to your palms, rub together, and cup over nose and mouth to inhale as often as needed.

HEARTBURN

Oral—Take a capsule filled with 5 drops each ginger and lemon, and 1 drop of fennel, 1 to 3 times daily. Apply 1 drop of peppermint directly on the tongue.

HEAT EXHAUSTION

Topical—Apply several drops of peppermint to the forehead, tips of the ears, shoulders, and back of the neck.

Other—Cover forehead with a cool damp cloth after applying peppermint.

HEEL SPURS

[See BONE SPURS](#)

HEMOPHILIA

Oral—Take a capsule with 3 drops each of geranium and helichrysum, 1 to 3 times daily.

HEMORRHOIDS

Topical—Apply a mixture of 1 drop each of lavender, cypress, cistus, myrrh, and helichrysum in a carrier oil to the area, several times daily.

HEPATITIS

Oral—Take a capsule filled with 5 drops each of orange, helichrysum, and German chamomile, 2 to 4 times daily.

Topical—Apply 5 drops each of helichrysum and orange over the liver area 2 to 4 times daily; apply a warm, wet towel over the liver after applying these oils, 1 to 2 times daily. Massage 5 to 10 drops of oregano and vetiver and 2 drops of thyme along the spine, once daily.

HERNIA

Topical—Apply 1 drop each of cypress, frankincense, rosemary, basil, lavender, marjoram, and eucalyptus to the area, 2 to 4 times daily.

Oral—Take a capsule filled with 5 drops each of frankincense, lemongrass, and copaiba, 2 to 4 times daily for pain.

HERPES SIMPLEX VIRUS

Oral—Take a capsule filled with 2 drops each of oregano, German chamomile, and ginger and 1 drop each of thyme, eucalyptus, and melaleuca (tea tree), 1 to 2 times daily.

HIGH BLOOD PRESSURE**(HYPERTENSION)**

Oral—Take a capsule filled with 2 drops each of ylang ylang, clove, and lavender, 1 to 2 times daily.

Topical—Apply 1 to 3 drops of ylang ylang, marjoram, and lavender to the heart area and over carotid arteries, 1 to 3 times daily.

Inhalation—Apply lavender or ylang ylang to your palms, rub together, and cup over nose and mouth to inhale as often as needed.

HIV (HUMAN IMMUNO-DEFICIENCY VIRUS)

Oral—Take a capsule filled with 3 drops each of cinnamon, lemon, orange, and oregano and 2 drops of melaleuca (tea tree), and another capsule filled with 5 drops each of frankincense and clove, 2 to 4 times daily.

Topical—Apply 3 to 5 drops of oregano, thyme, basil, cypress, wintergreen, marjoram, and peppermint (layered in that order, 1 at a time) to the spine and massage into back on either side of the spine, 2 times weekly.

HIVES

Oral—Take a capsule filled with 3 drops each of German chamomile, frankincense, and lavender, 1 to 3 times daily.

Topical—Apply a few drops of peppermint, myrrh, German chamomile, or lavender in a teaspoon of carrier oil to affected area as often as needed. Lavender with clary sage may work for tough hives. Hives may be aggravated by topical application of essential oils, so apply the oil to a small area first before applying to large areas.

HORMONAL IMBALANCE (MEN)

Topical—Apply 3 to 4 drops of blue spruce to the inside of each forearm 2 times daily. Alternately, fennel, myrtle, or a combination of both may be used (3 to 4 drops 2 to 3 times daily).

HORMONAL IMBALANCE (WOMEN)

Topical—Apply 2 to 4 drops of clary sage or fennel to forehead and bottoms of the feet, 1 to 2 times daily.

Other: Consider a natural bioidentical progesterone.

HOT FLASHES

Topical—Apply 1 drop of peppermint oil on the tip of each ear, on the outside of the right ankle, and on the back of the neck.

HUNTINGTON'S DISEASE

Only use this protocol in conjunction with Western medical options and with approval from a physician.

Topical—Apply 1 drop each of rosemary, frankincense and vetiver behind the ears and at the base of the skull 2 to 4 times daily. Apply 1 drop each of vetiver, geranium, German chamomile, marjoram, pine, frankincense, and helichrysum along the spine and feather lightly up the spine once daily.

Oral—Take a capsule filled with 5 drops each of orange, vetiver, and frankincense, 1 to 3 times daily.

HYDROCEPHALUS

Only use this protocol in conjunction with Western medical options and with approval from a physician.

Topical—Massage 1 to 3 drops of rosemary, myrrh, German chamomile, cedarwood, and peppermint layered in that order to both sides of the spine daily. Massage the feet with 2 to 3 drops of lavender, 3 times daily. For headache, apply 1 drop each of peppermint, rosemary, and lavender to the temples, crown of the head, forehead and behind the ears up to 6 times daily.

HYPERACTIVITY

Topical—Apply 1 to 2 drops each of lavender, cedarwood, and German chamomile to the sole of each foot and toes, 2 to 4 times daily.

Inhalation—Apply 1 drop of cedarwood and lavender to palms, rub together, and cup over nose and mouth to inhale as often as needed.

HYPERCHOLESTEROLEMIA (HIGH CHOLESTEROL)

Oral—Take a capsule filled with 5 drops each of lemongrass, clove, and cinnamon, morning and

evening.

**HYPERGLYCEMIA
(HIGH BLOOD SUGAR)**

Oral—Take a capsule filled with 4 drops each of cinnamon, fennel, coriander, and grapefruit, morning and evening.

Topical—Apply 1 to 3 drops each of cinnamon, coriander, fennel, and copaiba to the bottoms of the feet, particularly the pancreas VitaFlex point on the outer edge of the left foot about midway down, 2 to 4 times daily.

HYPERTENSION

[See HIGH BLOOD PRESSURE](#)

HYPERTHYROID

Oral—Take a capsule filled with 2 drops each of frankincense, myrrh, German chamomile, and clove, 1 to 3 times daily.

**HYPOGLYCEMIA
(LOW BLOOD SUGAR)**

Topical—Apply 1 drop each of lemongrass, lavender, and peppermint to the thyroid Vita Flex point on the bottoms of the feet (at the crease of the big toe), 2 to 4 times daily.

Topical—Apply 2 drops of myrtle, sandalwood, and lemongrass over the thyroid area on the chest, 1 to 3 times daily. Apply 8 to 10 drops of orange on the feet, once daily, particularly massaging it into the thyroid Vita Flex area on the feet.

**HYPOTENSION
(LOW BLOOD PRESSURE)**

Topical—Apply 1 to 3 drops of cypress, geranium, and rosemary to the heart area and over carotid arteries, 1 to 3 times daily.

HYPOTHERMIA

Topical—Massage the body with several drop of a combination of rosemary, basil, and marjoram in 1 teaspoon of carrier oil. Create a warm compress by adding 2 drops of each oil in 1 cup of warm water and dip a cloth in the mixture. Apply the cloth to hypothermic areas.

Oral—Add 1 drop of each of rosemary, basil, and marjoram to a cup of warm water and drink up to 3 times daily.

HYPOTHYROID

Oral—Take a capsule filled with 2 drops each of frankincense, myrrh, German chamomile, and clove, 1 to 3 times daily.

Topical—Apply 2 drops of myrtle, sandalwood, and peppermint over the thyroid area on the chest, 1 to 3 times daily. Apply 8 to 10 drops of orange on the feet, once daily, particularly massaging it into the thyroid Vita Flex area on the feet.

Other—Consider a desiccated natural thyroid supplement.

HYPOTONIA

Topical—Mix together 1 drop each of frankincense, sandalwood, vetiver, cedarwood, and blue

spruce in 2 teaspoons of carrier oil and apply to the base of the skull, behind the ears, and along the spine, 1 to 3 times daily. Mix together 2 drops each of juniper, marjoram, and pine in 1 teaspoon of carrier oil and massage into legs and arms, 1 to 2 times daily. Apply 3 to 4 drops of orange oil to the bottoms of the feet, 2 times daily.

IDIOPATHIC THROMBO-CYTOPENIA PURPURA

Oral—Take a capsule filled with 2 to 3 drops each of lemon, lavender, and helichrysum, 2 to 3 times daily.

Topical—Apply a combination of helichrysum, blue tansy, lavender, and frankincense to bruises up to 6 times daily.

IMPETIGO

Topical—Apply 1 to 3 drops each of oregano, thyme, melaleuca (tea tree), and eucalyptus to affected area, 3 to 5 times daily.

Oral—Take 1 capsule filled with 3 drops each of clove, oregano, lemon, cinnamon, and 1 drop of eucalyptus and melaleuca (tea tree), 2 to 3 times daily.

IMPOTENCE

Topical—Apply 2 to 3 drops of goldenrod or ylang ylang on lower abdomen or dilute heavily with carrier oil and apply to the base of the penis.

INCONTINENCE (URINARY)

Topical—Apply 3 to 5 drops of cypress or balsam fir over the bladder area, 2 to 4 times daily; for more support, apply 1 drop each of frankincense and cedarwood diluted to the area between the anus and vagina/scrotum.

Other—Perform pelvic floor (Kegel) exercises, 3 to 5 times daily, by squeezing the muscles you would use to stop your urine for 3 seconds then relaxing for 3 seconds; repeat the exercises 15 times.

INDIGESTION

Oral—Take a capsule filled with 3 drops each of ginger, peppermint, and fennel, and 1 drop of nutmeg, 1 to 3 times daily.

Topical—Apply 2 to 5 drops of ginger, peppermint, fennel, or nutmeg to the stomach area as needed.

INFERTILITY, FEMALE

This protocol may work best when used from the last day of one period until the next period begins, but success has been reported while performing the protocol through the entire cycle as well.

Topical—Apply 2 to 4 drops of clary sage to the lower abdomen and mons pubis 2 times daily. Apply 1 drop each of clary sage to the inside and outside of the right ankle.

Oral—Take a capsule filled with 2 drops each of ylang ylang and frankincense and 1 drop each of fennel, clary sage, and geranium, 2 times daily.

INFERTILITY, MALE

Topical—Apply 2 drops each of basil, sandalwood, and goldenrod to the inside of the ankles and on the wrists. Apply 2 drops of geranium, basil, and cypress to the lower abdomen above the penis, 2 times daily.

Oral—Take a capsule filled with 2 drops each of ylang ylang, frankincense, basil, and cypress, 2 times daily.

INFLAMMATION

Oral—Take a capsule filled with 5 drops each of copaiba and orange, and a second capsule filled with 2 drops each of balsam fir, frankincense, ylang ylang, and oregano, 1 to 3 times daily.

Topical—Apply 2 to 5 drops of copaiba, wintergreen, and frankincense to affected area, 1 to 4 times daily.

INSECT BITE/STING

Topical—Apply repeated doses of 1 drop of lavender, basil, lemongrass, or melaleuca (tea tree) to bite or sting until irritation subsides, and then continue applying 1 drop every 2 hours for the next 8 hours.

Other—If the stinger is still present in the skin use a blunt knife, credit card, or other similar object to flick/scrape the stinger out—do not pull it out as this can release more venom from the venom sack.

INSECT REPELLANT

Topical—Apply a mixture of 1 drop each of lemongrass, melaleuca (tea tree), myrtle, and lavender to exposed skin and clothes (may stain some clothes) as needed.

INSOMNIA

Topical—Apply 2 to 4 drops of lavender or German chamomile to the bottoms of feet.

Other—Place 2 drops of lavender on your pillow before retiring to bed.

INTENTION TREMORS

Topical—Apply 3 to 5 drops of oregano, thyme, basil, cypress, vetiver, marjoram, and peppermint (layered in that order, 1 at a time) to the spine and massage into back on either side of the spine once per week. Apply 1 drop each of vetiver, sandalwood, blue spruce and geranium behind the ears and at the base of the skull, 2 to 4 times daily.

IRITIS

Topical—Mix 2 drops each of basil, frankincense, lavender, copaiba, and pine in 1 teaspoon of carrier oil (preferable grapeseed) and apply a couple of drops of this mixture widely around the eye and behind the ears, several times daily.

Oral—Take a capsule filled with 7 drops copaiba, and 3 drops each of frankincense, pine, and cypress, 1 to 3 times daily.

IRRITABLE BOWEL SYNDROME

Oral—Take 1 capsule filled with 2 drops each of fennel, peppermint, nutmeg, juniper, and marjoram, 2 to 3 times daily.

Topical—Apply peppermint, fennel, juniper, and marjoram over the abdomen, 2 to 3 times daily.

ITCHING

Topical—Apply a few drops of peppermint, myrrh, German chamomile, or lavender to affected area as often as needed.

JAUNDICE

Topical—Adults: apply 3 to 5 drops of geranium, German chamomile, lemon, and helichrysum to the bottoms of the feet and over the liver (upper right part of the abdomen), 1 to 3 times daily. For infant jaundice, see the [children's section](#).

JET LAG

Topical—Apply 1 drop each of eucalyptus, cedarwood, and peppermint to the base of the skull, temples, and head in the morning and early afternoon; apply 1 drop each of frankincense, geranium, and lavender on temples, head, and neck at night.

JOCK ITCH

Topical—Dilute heavily and apply 1 drop each of eucalyptus, melaleuca (tea tree), and lavender to the area, 2 to 4 times daily.

Oral—Take a capsule filled with 3 drops each of lemongrass, oregano, and clove, 1 to 3 times daily.

JOINT PAIN

Topical—Apply a combination of wintergreen, balsam fir, copaiba, and marjoram to the affected area, 2 to 4 times daily.

Oral—Take 1 capsule with 4 drops each of frankincense, copaiba, and balsam fir and 2 drops pine, 2 times daily.

KELOIDS

Topical—Apply 1 to 2 drops of geranium, lavender, cistus, and helichrysum on and widely around the scar, 2 to 3 times daily until improved; if the scars are painful, apply 1 drop each of copaiba, basil, and balsam fir to the scar, 1 to 3 times daily between scar treatment applications for relief.

KERATOSIS PILARIS

Topical—Mix 1 drop each of lavender, lemongrass, and German chamomile in 1 tablespoon of coconut oil and apply to affected area, 1 to 3 times daily.

KIDNEY INFECTION

Kidney infections must be treated quickly to avoid severe complications such as permanent kidney damage and sepsis. Only use this protocol in conjunction with Western medical options and with approval from a physician.

Topical—Apply 3 to 5 drops of rosemary, vetiver, lemongrass, or cistus over the kidneys and on the bottoms of the feet, 2 to 3 times daily.

Oral—Take a capsule filled with 3 drops each of rosemary, thyme, oregano, lemongrass, and cistus, 1 to 3 times daily.

KIDNEY STONES

Oral—Take 1 capsule filled with 4 drops each of lemon, juniper, frankincense, and helichrysum 1 to 3 times, daily. To prevent kidney stones, drink a glass of water with 3 to 4 drops of lemon, daily.

Topical—Apply 5 to 10 drops of wintergreen, juniper, and German chamomile over the kidneys, 2 to 3 times daily.

LARYNGITIS

Oral—Gargle with 1 drop each of lemon, eucalyptus, and vetiver mixed in water and honey 2 to 4

times, daily, and swallow. Add 1 drop of any of the above oils to your water daily for 30 days after symptoms subside for deeper healing.

Topical—Apply 1 to 3 drops of eucalyptus, lemon, and thyme to the neck and chest, 2 to 4 times daily.

LEG CRAMPS

Topical—Apply 3 to 7 drops of cypress, black spruce, and/or marjoram to the legs before going to bed or immediately following muscle cramp.

Other—Drink ample fluids with electrolytes (coconut water is a great natural electrolyte) and increase dietary minerals.

LEISHMANIASIS

Oral—Take a capsule filled with 5 drops each of lemongrass, clove, and German chamomile, 2 to 4 times daily.

Topical—For cutaneous leishmaniasis, apply 1 drop each of lemongrass, clove, and German chamomile to the affected area up to 6 times daily.

LEPROSY

Topical—Apply 2 to 3 drops each of lavender, myrrh, vetiver, and melaleuca (tea tree) to the affected area, 2 to 3 times daily.

Oral—Take a capsule with 2 drops each of clove, cinnamon, lemon, oregano, and rosemary, 1 to 3 times daily.

LEPTOSPIROSIS

Oral—Take a capsule filled with 3 drops each of cinnamon, lemongrass, oregano, peppermint, and lemon, 1 to 2 times daily.

Retention—For difficult cases, consider mixing 2 drops each of oregano, lemon, and eucalyptus in 1 tablespoon of carrier oil and retain in rectum for up to 8 hours; repeat, 2 times daily.

LEUKEMIA

Oral—Take 0.018 to 0.045 ml of enriched frankincense or frankincense per pound of body weight (for example, a 150-pound person would take 2.7 to 6.75 ml daily) in 3 to 6 divided doses throughout the day with food for 21 days. Take 0.02 to 0.067 ml (about 3 to 10 ml for a 150-pound person) of orange per pound of body weight in 3 divided doses with food, daily. Take 5 to 10 drops of lemongrass with 5 drops of olive oil in a capsule, 3 times daily.

Other—Intermittent fasting (only consuming water) for 24 hours, 2 times weekly, or 48 hours once weekly. Alternately, some practitioners recommend fasting for 30-plus days drinking only carrier and fruit juices. Make sure they don't have added sugar.

LEWY BODY DEMENTIA

Oral—Take a capsule filled with 4 drops each of basil, lavender, cedarwood, and frankincense, 1 to 2 times daily.

Topical—Apply 1 to 3 drops of lavender, cedarwood, vetiver, frankincense, and rosemary on the forehead, temples, and behind the ears, 2 to 4 times daily. Apply 8 to 10 drops of orange oil on the bottoms of the feet 2 times daily. For muscle dysfunction, apply 2 to 3 drops each of German chamomile, marjoram, pine, frankincense, and helichrysum to the long bones of the body, 2 to 4 times daily.

LIBIDO (LOW, FEMALE)

Topical—Apply 2 drops each of ylang ylang, clary sage, geranium, and sandalwood and 1 drop of blue spruce to the back and shoulders, 1 to 2 times daily.

LIBIDO (LOW, MALE)

Topical—Apply 3 drops of blue spruce and 1 drop each of cedarwood, sandalwood, ylang ylang, and orange to the back and shoulders, 1 to 2 times daily.

LICE

[See HEAD LICE](#)

LICHEN PLANUS

Oral—Take a capsule filled with 3 drops each of vetiver, frankincense, lavender and spruce, and 1 drop of clove, morning and evening. Take an additional capsule with 3 drops each of clove, oregano, lemon, cinnamon, and 1 drop of eucalyptus and melaleuca (tea tree), once midday. For oral lichen planus, add 1 drop each of clove, melaleuca (tea tree), and oregano to half a cup of water and 1 teaspoon of aloe vera, and then swish, gargle, and swallow up to 3 times daily.

Topical—For lichen planus that affects the skin, apply 1 to 2 drops each of frankincense, lavender, and melaleuca (tea tree) in 1 teaspoon of aloe vera to the affected area as often as needed.

LICHEN SIMPLEX CHRONICUS

Topical—Dilute heavily 1 to 2 drops each of frankincense, lavender, and melaleuca (tea tree) and apply to affected area as often as needed. Apply 1 drop each of lavender, cedarwood, copaiba, and orange to the wrists, 2 to 4 times daily.

Oral—Take a capsule filled with 5 drops each of lavender and German chamomile, 1 to 3 times daily.

Other—Do not scratch the area as it will make the condition worse.

LIPOMA

Topical—Apply 1 to 2 drops each of frankincense, grapefruit, lemon, and lavender to the area, 2 to 4 times daily.

Oral—Take a capsule filled with 3 drops each of frankincense, myrtle, lemongrass, and lemon, 1 to 3 times daily.

LIVER CIRRHOSIS

Topical—Apply 1 to 2 drops each of helichrysum, nutmeg, and orange over the liver area, 2 times daily.

Oral—Take a capsule filled with 1 drop each of lemon, ginger, and myrrh, 3 times daily.

LOU GEHRIG'S DISEASE (ALS)

Topical—Apply 3 to 5 drops of oregano, thyme, basil, cypress, wintergreen, marjoram, and peppermint (layered in that order, 1 at a time) to the spine and massage into back on either side of the spine, 2 to 4 times weekly; apply 1 drop each of blue spruce, vetiver, frankincense, and sandalwood behind the ears and at the base of the skull, 2 to 4 times daily. Apply 10 drops of orange oil on the bottoms of the feet, 2 times daily. Apply 1 to 2 drops each of marjoram, pine, lavender, and lemongrass to the major muscles, 1 to 3 times daily.

Oral—Take a capsule filled with 5 drops each of frankincense, sandalwood, and myrrh, 1 to 3 times daily.

LOW BLOOD PRESSURE

[See HYPOTENSION](#)

LOW BLOOD SUGAR

[See HYPOGLYCEMIA](#)

LUPUS

Topical—Massage entire body with thyme, melaleuca (tea tree), and lemongrass mixed with a carrier oil, 3 times per week.

Oral—Take a capsule filled with 4 drops each of lemongrass, thyme, helichrysum, and rosemary, morning and evening.

Other—See recommendations for joint pain, rash, and indigestion for support for other common symptoms of lupus.

LYME DISEASE

Oral—Take a capsule filled with 3 drops each of carrier oil, clove, oregano, and cinnamon and 1 drop each of melaleuca (tea tree) and thyme, 3 times daily.

Topical—Apply 2 to 3 drops of lemongrass, frankincense, and ylang ylang to the bottoms of the feet, 2 to 3 times daily.

LYMPHEDEMA

Topical—Apply 1 to 3 drops each of lemongrass, juniper, lemon, cypress, and grapefruit to the affected area 1 to 3 times daily. Make sure massage strokes move from the extremities to the center of the body.

Oral—Take a capsule filled with 3 drops each of cypress, grapefruit, and helichrysum, 1 to 3 times daily.

Other—Receive lymphatic drainage massage by a qualified massage therapist if possible.

LYMPHOMA

Oral—Take 0.018 to 0.045 ml of enriched frankincense or frankincense per pound of body weight (for example, a 150-pound person would take 2.7 to 6.75 ml daily) in 3 to 6 divided doses throughout the day with food for 21 days. Take 0.02 to 0.067 ml (about 3 to 10 ml for a 150-pound person) of orange per pound of body weight in 3 divided doses with food daily.

Other—Intermittent fasting (only consuming water) for 24 hours, 2 times weekly, or 48 hours once weekly. Alternately, some practitioners recommend fasting for 30-plus days drinking only vegetable and fruit juices. Make sure they don't have added sugar.

Retention—Mix 15 ml of frankincense with 60 ml of carrier oil and insert half of the mixture into the rectum, retain overnight, repeat for 5 nights, with a 3-day rest period and then repeat.

Topical—Apply 3 to 5 drops of frankincense or myrrh to swollen lymph nodes, 2 to 4 times daily.

MACULAR DEGENERATION

Oral—Take a capsule filled with 5 drops each of lemon and clove, 1 to 2 times daily.

Topical—Apply 1 drop each of frankincense and helichrysum widely around the eye, 2 to 4 times daily. Apply 2 drops of frankincense to the palm and cup over eye (with eye open) for a few minutes, 3 to 5 times daily.

MALARIA

Life-threatening complications can develop with malaria. Only use this protocol in conjunction with Western medical options and with approval from a physician.

Oral—Take a capsule with 5 drops each of lemon and rosemary and 1 drop each of thyme, melaleuca (tea tree), myrtle, and eucalyptus, 1 to 3 times daily.

Topical—Apply 2 to 3 drops of thyme, rosemary or melaleuca (tea tree), and lemon to the spine and bottoms of the feet before retiring to bed at night.

Other—Take 3 drops of lemongrass in a capsule 2 times daily to prevent mosquito bites. Use insect repellent suggestion to prevent mosquito bites.

MASTOCYTOSIS, CUTANEOUS

Topical—Apply 1 to 2 drops each of German chamomile, cedarwood, lavender, frankincense, thyme and eucalyptus to the affected area, 2 to 4 times daily.

Oral—Take a capsule filled with 5 drops each of lemon, orange, and frankincense, 1 to 3 times daily.

MEASLES

Only use this protocol in conjunction with Western medical options and with approval from a physician.

Topical—Apply melaleuca (tea tree), lavender, and German chamomile to spots several times daily.

Oral—Take a capsule filled with 2 drops each of German chamomile, lavender, and oregano, 2 to 3 times daily.

MEDULLARY SPONGE KIDNEY

Oral—Take a capsule filled with 3 drops each of lemon, cistus, grapefruit, and geranium, 1 to 3 times daily.

Topical—Apply 2 drops each of cistus, juniper, and frankincense over the kidney area of the back, 2 to 4 times daily.

MELANOMA

Topical—Apply 2 to 4 drops each of sandalwood, frankincense, geranium, cinnamon, pine, and cypress to the affected area, 3 to 5 times a daily. Apply in a carrot seed carrier oil to enhance effects. Apply 8 to 10 drops of orange oil to the bottoms of the feet, 2 to 3 times daily. Apply more geranium and helichrysum as the area begins to heal to prevent scarring.

Oral—Take 0.018 to 0.045 ml of enriched frankincense or frankincense per pound of body weight (for example, a 150-pound person would take 2.7 to 6.75 ml daily) in 3 to 6 divided doses throughout the day with food for 21 days, rest for 7 days, and then repeat if necessary.

MENIERE'S DISEASE

Topical—Apply 1 to 2 drops of helichrysum and frankincense behind the ears and on the fleshy part of the ear, 2 to 4 times daily.

Other—Apply 1 drop of helichrysum on a cotton ball and place cotton ball in ear overnight; repeat for both ears.

Inhalation—Place 1 drop each of peppermint, ginger, and cypress in 1 palm, rub together with other palm, and cup hands over mouth and nose to inhale as often as necessary.

MENINGITIS

Only use this protocol in conjunction with Western medical options and with approval from a physician.

Topical—Apply 2 drops each of oregano, eucalyptus, melaleuca (tea tree), lemon, and thyme in 10 drops of carrier along the spine and behind and below the ears up to 3 times daily.

Oral—Take a capsule with 3 drops each of oregano, lemon, cinnamon, and clove and 1 drop each of melaleuca (tea tree) and thyme 3 times daily.

MENOPAUSAL SYMPTOMS

Topical—Apply 2 to 3 drops of German chamomile, clary sage, or fennel to the forehead, carotid arteries, lower abdomen, and back, 1 to 3 times daily. Apply 1 drop of peppermint to the tips of the ears, temples and back of the neck for hot flashes.

Inhalation—Apply 1 to 2 drops of frankincense or German chamomile to your palms, rub together, and cup over nose and mouth to inhale as often as needed.

Other: Consider a natural bioidentical progesterone.

MENSTRUAL CRAMPS

Topical—Apply 1 drop each of basil, clary sage, and lavender to the lower abdomen, and then cover with warm damp cloth followed by a warm dry towel.

MENSTRUAL PAIN

Topical—Apply 2 to 4 drops of clary sage, peppermint, or lavender on the lower abdomen and lower back as needed.

MENSTRUATION, EXCESS

Topical—Massage lower abdomen with 1 to 2 drops each of cinnamon, cypress, helichrysum, and geranium heavily diluted in carrier oil, 1 to 3 times daily.

METABOLIC SYNDROME

See [HIGH BLOOD PRESSURE](#), [HYPERCHOLESTEROLEMIA](#), [HYPERGLYCEMIA](#), and [WEIGHT MANAGEMENT](#)

METHYLENETETRAHYDROFOLATE REDUCTASE POLYMORPHISM (MTHFR)

Oral—Take a capsule filled with 3 drops each of copaiba, frankincense, and balsam fir and 2 drops each of lemongrass, clove, and cinnamon, morning and evening.

Topical—Apply 8 to 10 drops of orange oil to the bottoms of the feet, daily.

MIDDLE EAST RESPIRATORY SYNDROME (MERS, CORONAVIRUS)

Only use this protocol in conjunction with Western medical options and with approval from a physician.

Oral—Take a capsule filled with 4 drops each of cinnamon and oregano, 2 drops thyme, and 1 drop each of eucalyptus and melaleuca (tea tree), 1 to 3 times daily.

Topical—Apply 1 drop each of myrtle, eucalyptus, and pine to the chest and upper back, 2 to 4 times daily.

Inhalation—Place 5 to 7 drops each of myrtle and eucalyptus in 3 inches of hot water that is not too hot to touch with your hand, and cover head with towel to inhale every 2 hours.

MIGRAINE

Topical—Apply peppermint, copaiba, basil, and lavender to the temples, forehead, and back of the neck as often as needed. Place 1 drop of peppermint on your thumb and press to the roof of your mouth every 15 to 30 minutes until symptoms subside.

Inhalation—Apply lavender, eucalyptus, and peppermint to your palms, rub together, and cup over nose and mouth to inhale as often as needed.

MISOPHONIA (Selective Sound Sensitivity Syndrome)

Topical—Apply 1 drop each of vetiver, cedarwood, cypress and myrrh behind the ears and on the fleshy part of the ear 2 times daily. Apply 1 drop each of lavender, cedarwood, and German chamomile to the wrists, 2 to 4 times daily. Place 1 drop of helichrysum on 2 cotton balls and retain in each ear overnight.

MOLES

Topical—Apply 1 drop of frankincense or oregano to the mole, 2 times daily.

MOLLUSCUM CONTAGIOSUM

Topical—Mix 2 to 4 drops each of lemongrass, melaleuca (tea tree), and geranium in carrier oil and apply to affected areas, 3 to 5 times daily.

Oral—Take a capsule filled with 3 drops each of lemongrass, oregano, cinnamon, and lemon, 1 to 2 times daily.

MONONUCLEOSIS

[See EPSTEIN BARR](#)

MONTGOMERY (AREOLAR) GLAND BLOCKAGE/CYST

Topical—Apply 1 to 2 drops each of frankincense, lavender, and helichrysum to the area and cover with a warm compress, 2 to 4 times daily.

Oral—Take a capsule filled with 3 drops each of lemon, frankincense, and lavender, 1 to 2 times daily.

MOOD DISTURBANCE

Inhalation—Apply frankincense, lavender, or German chamomile to your palms, rub together, and cup over your nose and mouth to inhale as needed.

Topical—Apply frankincense, lavender, or German chamomile to the temples and neck as often as needed.

MOTION SICKNESS

Oral—Take a capsule with 3 drops each of fennel, peppermint, and ginger 30 minutes before travel and again every 4 hours.

Inhalation—Apply 1 to 2 drops of peppermint to your palms, rub together, and cup over your nose and mouth to inhale as needed.

MRSA

Topical—Apply 1 to 2 drops each of eucalyptus, lemongrass, thyme, and melaleuca (tea tree) to affected area, 2 to 4 times daily.

Oral—Take a capsule filled with 4 drops each of cinnamon and clove, and 1 drop of each lemongrass

and eucalyptus, 2 to 3 times daily.

MULTIPLE SCLEROSIS

Only use this protocol in conjunction with Western medical options and with approval from a physician.

Topical—Apply a total 1 to 2 drops each of frankincense, helichrysum, vetiver, rosemary, marjoram, and wintergreen along the spine, 2 times daily. Apply 1 to 2 drops of vetiver, blue spruce, cedarwood, and frankincense on temples, forehead, and behind the ears. Apply 8 to 10 drops of orange oil on the feet, 2 times daily.

Oral—Take a capsule with 3 drops each of rosemary, balsam fir, helichrysum, and copaiba morning and night.

MUMPS

Only use this protocol in conjunction with Western medical options and with approval from a physician.

Topical—Apply 2 to 4 drops of melaleuca (tea tree), thyme, or lavender behind the ears, 4 times daily.

Oral—Take a capsule filled with 4 drops each of lemon, lavender, and cypress, 2 times daily.

MUSCLE CRAMPS

Topical—Apply 3 drops each of lavender, marjoram, and basil to the affected area and cover with a warm towel or hot compress.

Other—Stretch the muscle.

MUSCLE PAIN/SORENESS

Topical—Apply 3 drops each of pine, copaiba, balsam fir, and marjoram to sore muscles, 2 to 3 times daily.

MUSCLE SPASMS

Topical—Apply 2 drops each of basil, wintergreen, lavender, and marjoram to muscles, 2 to 3 times daily.

MUSCULAR DYSTROPHY

Only use this protocol in conjunction with Western medical options and with approval from a physician.

Topical—Massage 2 to 3 drops each of pine, basil, lavender, and balsam fir along spine, 2 to 4 times daily. Apply 1 to 2 drops each of marjoram, pine, lavender, and lemongrass to the major muscles, 1 to 3 times daily.

MYASTHENIA GRAVIS

Topical—Apply 3 to 5 drops of oregano, thyme, basil, cypress, wintergreen, marjoram, and peppermint (layered in that order, 1 at a time) to the spine and massage into back on either side of the spine once per week. Apply 5 drops each of blue spruce, frankincense, and vetiver along the spine starting at the base of the skull finishing just above the tailbone, 1 to 3 times daily. Apply 2 drops each of clove, melaleuca (tea tree), oregano, and thyme to the bottoms of the feet, 2 times daily for

seven days and then rest from using for 7 days before continuing usage.

MYELOYDYSPLASTIC SYNDROME

Oral—Take 2 capsules, 1 filled with 15 drops of orange and the other filled with 15 drops of lemon, 2 to 4 times daily. Take 0.018 to 0.045 ml of enriched frankincense or frankincense per pound of body weight (for example, a 150-pound person would take 2.7 to 6.75 ml daily) in 3 to 6 divided doses throughout the day with food for 21 days.

Topical—Apply 2 to 3 drops each of German chamomile, marjoram, pine, frankincense, and helichrysum to the long bones of the body 2 to 4 times daily. Apply 4 to 5 drops each of lemon and orange to the bottoms of the feet 2 times daily.

MYOSITIS

Oral—Take a capsule filled with 5 drops each of copaiba, frankincense, and orange oil, 1 to 3 times daily.

Topical—Apply 2 drops each of basil, marjoram, balsam fir, and copaiba to area of soreness, 2 to 4 times daily. For skin rashes (dermatomyositis), apply 1 drop each of lavender, German chamomile, and melaleuca (tea tree) to affected area, 1 to 3 times daily.

NAILS, BRITTLE OR WEAK

Topical—Cover nail, particularly the base of the nail(s), with 1 drop each of grapefruit, frankincense, and myrrh.

NARCOLEPSY

Topical—Apply 1 to 2 drops each of peppermint and geranium on the temples up to five times daily during the day. Apply 8 drops of orange oil to the feet daily. Apply 2 drops each of lavender, orange, blue tansy, and ylang ylang to the bottoms of the feet before going to bed.

Other—Place two drops of lavender on pillow before retiring for bed.

NAUSEA

Oral—Take a capsule filled with 3 drops each of ginger, peppermint, and fennel, 1 to 3 times daily.

Topical—Apply 1 to 2 drops of ginger, fennel, or peppermint in the navel and behind the ears every 1 to 2 hours.

Inhalation—Apply 1 to 2 drops of peppermint or ginger to your palms, rub together, and cup over your nose and mouth to inhale as needed.

NERVOUS TICS

Topical—Apply 1 to 2 drops of vetiver, frankincense, cedarwood and blue spruce behind the ears and at the base of the skull, 1 to 3 times daily. Apply 8 to 10 drops of orange oil to the bottoms of the feet, 1 to 2 times daily.

Inhalation—Place 2 drops each of lavender and German chamomile on a tissue and inhale as needed.

Oral—Take a capsule filled with 1 to 2 drops each of vetiver, frankincense, marjoram, and lavender, 2 to 4 times daily.

NEURALGIA

Topical—Apply 2 drops of helichrysum, eucalyptus, blue spruce, vetiver, and copaiba to affected area, 3 to 5 times daily.

Oral—Take a capsule with 5 drops of helichrysum and 2 drops each of copaiba, vetiver, and

lavender, 1 to 3 times daily.

NEUROBLASTOMA

Topical—Apply 3 to 5 drops each of bergamot, orange, and lemongrass to the base of the skull, crown of the head, and behind the ears, 2 to 4 times daily.

Oral—Take 0.018 to 0.045 ml of enriched frankincense or frankincense per pound of body weight (for example, a 150-pound person would take 2.7 to 6.75 ml daily) in 3 divided doses throughout the day for 21 days. Take 0.02 to 0.067 ml (about 3 to 10 ml for a 150-pound person) of orange per pound of body weight in 3 divided doses daily for 21 days, then rest for 7 days, and restart regimen if necessary.

Other—Intermittent fasting (only consuming water) for 24 hours, 2 times weekly or 48 hours once weekly. Alternately, some practitioners recommend fasting for 30-plus days drinking only vegetable and fruit juices. Make sure they don't have added sugar.

NEUROMA

Topical—Apply 1 drop each of vetiver, frankincense, orange, helichrysum, and copaiba to the area of discomfort, several times daily.

Oral—Take a capsule filled with 4 drops each of frankincense, orange, and copaiba and 3 drops of vetiver, 2 to 4 times daily.

NEUROPATHY

Topical—Apply 1 to 2 drops each of frankincense, blue spruce, vetiver, helichrysum, lavender, and eucalyptus to affected area, 3 to 5 times daily.

Oral—Take a capsule filled with 3 drops each of coriander, helichrysum, copaiba, and 1 drop of nutmeg, 1 to 3 times daily.

NIGHT TERRORS

Topical—Apply 1 to 2 drops each of lavender, and ylang ylang to the bottoms of the feet.

NIPPLES, SORE

Topical—Apply 1 to 2 drops of lavender and helichrysum to the sore nipple(s), 1 to 3 times daily.

NOSEBLEED

Other—Apply direct pressure by gently squeezing the lower soft parts of the nose against the center wall continuously until bleeding stops.

Topical—Apply 1 drop of cypress or helichrysum across the bridge of the nose.

OBESITY

[See WEIGHT MANAGEMENT](#)

OBSESSIVE-COMPULSIVE DISORDER (OCD)

Topical—Apply 1 drop of lavender on each big toe and the bottoms of the feet, 2 to 4 times daily, particularly before going to bed. Apply 1 drop each of frankincense, sandalwood, spruce, and lavender to the base of the skull and behind the ears, 1 to 3 times daily.

OSTEOARTHRITIS

Topical—Apply 2 to 3 drops each of balsam fir, peppermint, cypress, and wintergreen on affected

area, 2 to 3 times daily.

Oral—Take capsule filled with 4 drops each of copaiba, frankincense, and balsam fir, and 1 drop nutmeg, 1 to 3 times daily.

OSTEOMYELITIS

Topical—Apply 1 to 2 drops each of black spruce, sandalwood, balsam fir, lemongrass, helichrysum, wintergreen, German chamomile, and blue tansy several times daily. Thyme and eucalyptus can also be considered.

Oral—Take a capsule with 3 drops each of vetiver, oregano, lemongrass, clove, and melaleuca (tea tree), 1 to 3 times daily.

OSTEOPENIA

Topical—Create a mixture of 2 to 3 drops each rosemary, eucalyptus, thyme, and pine in 2 tablespoons of carrier oil and apply to the arms and legs, 2 to 4 times daily.

Oral—Take a capsule with 2 drops each of pine, rosemary, thyme, and juniper, 1 to 3 times daily.

OSTEOPOROSIS

Topical—Apply 3 to 5 drops of clary sage, rosemary, and thyme to affected area, 1 to 3 times daily. Men may prefer to use pine in place of clary sage.

Oral—Take a capsule with 3 drops each of clary sage, rosemary, thyme, and vetiver, 1 to 3 times daily. Men may prefer to take juniper or pine in place of clary sage.

OSTEOSARCOMA

Oral—Take 0.018 to 0.045 ml of enriched frankincense or frankincense per pound of body weight (for example, a 150-pound person would take 2.7 to 6.75 ml daily) in 3 to 6 divided doses throughout the day with food for 21 days. Take 0.02 to 0.067 ml (about 3 to 10 ml for a 150-pound person) of orange per pound of body weight in 3 divided doses with food daily.

Other—Intermittent fasting (only consuming water) for 24 hours, 2 times weekly, or 48 hours once weekly. Alternately some practitioners recommend fasting for 30-plus days drinking only vegetable and fruit juices. Make sure they don't have added sugar.

Topical—Apply 5 to 7 drops each of balsam fir, cypress, and marjoram to the long bones around the knees, 2 to 4 times daily.

OVARIAN CYST

Topical—Apply orange, frankincense, and basil over lower abdomen several times daily. Mix with grapeseed carrier oil to enhance effects.

Oral—Take a capsule filled with 5 drops each of frankincense, orange, and clove, 1 to 3 times daily.

Retention—Mix 8 drops each of frankincense, lavender, and cypress with 1 tablespoon of carrier oil, apply mixture to tampon, and retain overnight.

OVERACTIVE BLADDER

Oral—Take a capsule filled with 2 drops each of juniper, cypress, geranium, and German chamomile, morning and evening.

Topical—Apply 2 to 3 drops of ylang ylang and cypress or balsam fir over the bladder area, 3 times daily; for more support, apply 1 drop each of frankincense and cedarwood diluted to the area between the anus and vagina/scrotum at the same time.

Other—Perform pelvic floor (Kegel) exercises 3 to 5 times daily by squeezing the muscles you would use to stop your urine for 3 seconds and then relaxing for 3 seconds; repeat the exercises 15 times. Follow a schedule to go to the bathroom to train your bladder.

PAGET'S DISEASE

Topical—Apply 2 drops each of rosemary, peppermint, balsam fir, pine, and wintergreen to the affected area, 2 to 4 times daily.

Oral—Take a capsule filled with 3 drops each of vetiver, frankincense, lavender and spruce, and 1 drop of nutmeg and clove, 1 to 3 times daily.

PAIN

Topical—Apply a combination of wintergreen, balsam fir, copaiba, and marjoram to affected area, 2 to 4 times daily.

Oral—Take 1 capsule with 5 drops each of frankincense, copaiba, and balsam fir and 2 drops clove, 1 to 3 times daily.

PANCREATITIS

Topical—Apply 2 to 4 drops each geranium, peppermint, and orange over the pancreas, 2 to 4 times daily.

Oral—Take a capsule with 5 drops each of geranium, peppermint, and orange, 1 to 3 times daily.

Retention—Mix 5 drops each of orange, geranium, and oregano with 1 tablespoon of carrier oil, insert rectally, and retain for 1 hour, 3 times weekly.

PARANOIA

Topical—Place 1 drop each of ylang ylang, German chamomile, blue spruce, and lavender to the temples, forehead, and bottoms of the feet up to 3 times daily.

Inhalation—Place 1 to 2 drops of ylang ylang, lavender, blue spruce, and German chamomile on palms, rub palms together, and cup over nose and mouth to inhale as needed. Or place the same oils on a tissue and inhale as necessary.

PARASITES (INTESTINAL)

Oral—Take a capsule filled with 3 drops each of ginger, lemongrass, oregano, peppermint, and lemon, 1 to 2 times daily.

PARKINSON'S DISEASE

Oral—Take a capsule filled with 4 drops each of basil (linalool CT only), lavender, cedarwood, and frankincense, 1 to 2 times daily.

Topical—Apply 1 to 3 drops of lavender, cedarwood, peppermint, or myrrh on the forehead, temples, and behind the ears, 2 to 4 times daily.

PERIPHERAL ARTERIAL DISEASE

Oral—Ingest 4 drops each of rosemary, juniper, lemon, and ylang ylang, 2 to 4 times daily.

Topical—Apply 2 to 3 drops each of cypress, rosemary, ylang ylang, and helichrysum to the lower legs, 2 to 4 times daily.

PEYRONIE'S DISEASE

Topical—Apply 1 drop of vetiver, frankincense, cistus and sandalwood heavily diluted to the penis, 1

to 3 times daily.

Oral—Take a capsule filled with 5 drops each of frankincense, vetiver, and sandalwood, 2 to 4 times daily.

PHANTOM LIMB PAIN

Topical—Apply 2 drops each of vetiver, blue spruce, and copaiba to the area above the phantom limb pain. Apply 1 drop each of lavender, German chamomile, and cedarwood to the wrists, rub together, and inhale, 2 to 4 times daily (alternately apply to the feet or spine depending on amputation site).

PINWORMS

Topical—Apply 1 drop of melaleuca (tea tree) to the affected area, 3 to 5 times daily.

Oral—Add 1 drop each of lemon, basil, and orange to warm water and drink up to 3 times daily.

PIRIFORMIS SYNDROME

Topical—Apply 2 to 3 drops each of marjoram, basil, and lavender to the buttocks muscles, up to 6 times daily.

Oral—Take a capsule filled with 3 drops each of lavender, myrtle, German chamomile, and ginger, 1 to 3 times daily.

Other—Lie on your side and have another person apply pressure to acupuncture point GB30 (pictured below), which can be found in the side of the buttocks by locating approximately the middle of the sacrum, and then moving out two-thirds of the way toward the hip. Apply firm pressure to this point (left or right side 1 at a time) with your thumb for about 30 seconds, and then release. Repeat this process until pain is relieved. Then repeat the entire process on the other side.

PLANTAR FASCIITIS

Topical—Apply 2 drops each of eucalyptus and wintergreen and 1 drop each of balsam fir and cypress to the affected area, 2 to 4 times daily.

Other—After applying the essential oils place a golf ball under the painful area of the foot and roll the golf ball around starting at the front and working to the back of the foot for a total of 3 to 5 minutes. Make sure to use firm pressure. Freeze the golf ball first for better results.

PLANTAR WARTS

Topical—Apply 1 to 2 drops of oregano, thyme, or frankincense to the wart, several times daily.

PLEURISY

Inhalation—Place 6 to 10 drops each of eucalyptus, myrtle, and cypress in a boiling pot of water, and cover head and bowl with towel to inhale.

Topical—Apply 3 to 5 drops each of wintergreen, eucalyptus, and cypress to the neck and chest, 2 to 3 times daily.

PNEUMONIA

Only use this protocol in conjunction with Western medical options and with approval from a physician.

Topical—Apply 2 to 6 drops of eucalyptus, melaleuca (tea tree), thyme, or oregano to the chest and neck as needed. Apply same oils to bottoms of the feet every 2 hours.

Oral—Take 1 capsule filled with 3 drops each of carrier oil, clove, oregano, and cinnamon, and 1

drop of eucalyptus, 2 to 3 times daily.

Inhalation—Place 5 to 7 drops each of myrtle and eucalyptus in 3 inches of hot water that is not too hot to touch with your hand, and cover head with towel to inhale every 2 hours.

PNEUMONIC PLAGUE

Only use this protocol in conjunction with Western medical options and with approval from a physician.

Oral—Take a capsule filled with 5 drops each of cinnamon and oregano, and 1 drop each of thyme, eucalyptus, and melaleuca (tea tree), 2 to 3 times daily.

Topical—Apply 2 to 6 drops of eucalyptus, melaleuca (tea tree), thyme, or oregano to the chest and neck as needed. Apply same oils to bottoms of the feet every 2 hours.

Inhalation—Place 5 to 7 drops each of myrtle and eucalyptus in 3 inches of hot water that is not too hot to touch with your hand, and cover head with towel to inhale every 2 hours.

POLYCYSTIC KIDNEY DISEASE (PKD)

Topical—Apply 2 drops each of juniper, geranium, sandalwood, orange, and cistus over the kidney area on your back, 2 to 4 times daily. Apply 1 to 2 drops each of basil, peppermint, and copaiba over painful areas.

Oral—Take 3 drops each of frankincense, lemon, geranium, grapefruit, and sandalwood in a capsule, 2 to 4 times daily.

PREMENSTRUAL SYNDROME (PMS)

Inhalation—Apply clary sage and geranium to the palms, cup over nose and mouth, and inhale as needed.

Topical—Apply 1 to 3 drops of clary sage, fennel, or geranium to the lower abdomen, 1 to 3 times daily.

POISON IVY/OAK

Topical—Apply 1 to 2 drops each of ginger, lavender, peppermint, and frankincense diluted heavily in a carrier oil (particularly in the weeping stage).

POLIO

Only use this protocol in conjunction with Western medical options and with approval from a physician.

Oral—Take a capsule filled with 3 drops each of frankincense, oregano, lemon, and thyme, 2 times daily.

POLYCYSTIC OVARY SYNDROME

Other—Consider using a bioidentical natural progesterone.

Topical—Apply orange, frankincense, and basil over lower abdomen several times daily. Mix with grapeseed carrier oil to enhance effects.

Oral—Take a capsule filled with 5 drops each of frankincense, orange, and clove, 1 to 3 times daily.

Retention—Mix 8 drops each of frankincense, lavender, and cypress with 1 tablespoon of carrier oil, apply mixture to tampon, and retain overnight.

POLYMYALGIA RHEUMATICA

Oral—Take a capsule filled with 5 drops each of copaiba and vetiver, 4 drops of balsam fir, and 1 drop of thyme, 1 to 3 times daily.

Topical—Apply 1 to 2 drops each of peppermint, wintergreen, frankincense, eucalyptus, thyme, and copaiba to affected area as needed (cypress and helichrysum may also be added to increase circulation to affected areas).

POLYMYOSITIS

Oral—Take a capsule filled with 2 to 3 drops each of copaiba, frankincense, lemon, orange, and sandalwood, 3 times daily.

Topical—Apply 1 to 2 drops each of marjoram, basil, and lavender to the affected muscles up to 3 times daily.

PROSTATITIS

Topical—Apply 1 to 2 drops of peppermint, thyme, or tsuga heavily diluted to the area between the scrotum and anus, 2 times daily.

Retention—Mix 2 drops each of peppermint, thyme, and tsuga in 1 tablespoon of carrier oil and insert rectally; retain as long as possible.

Oral—Take a capsule filled with 4 drops each of oregano, vetiver, and peppermint, 1 to 3 times daily.

PSEUDOMONAS

Topical—Apply 1 to 2 drops each of geranium, melaleuca (tea tree), lemongrass, pine, basil, and peppermint to the chest and upper back, 2 to 4 times daily. Apply 2 drops each of clove, oregano, eucalyptus, and cinnamon to the bottoms of the feet, 2 to 3 times daily.

Oral—Take 1 capsule filled with 2 drops each of clove, oregano, lemon, cinnamon, and 1 drop of eucalyptus, 2 to 3 times daily.

PSORIASIS

Topical—Apply 1 drop each of lavender, cistus, frankincense, German chamomile, and melaleuca (tea tree) diluted in 2 tablespoons of aloe vera oil to the affected area as often as needed. Lemon oil may also be beneficial, but you must avoid sun exposure where applied following application.

Other—Some essential oils and carrier oils will exacerbate chronic skin conditions. If this occurs, consider applying homeopathic calendula or cardiospermum instead.

PSORIATIC ARTHRITIS

Topical—Apply 1 to 2 drops each of lavender, cistus, frankincense, and melaleuca (tea tree) in a carrier oil (preferably borage seed oil or evening primrose oil) to the affected area as often as needed. Apply 3 to 5 drops of oregano, thyme, basil, cypress, wintergreen, marjoram, and peppermint (layered in that order, 1 at a time) to the spine and massage into back on either side of the spine, 2 times per week.

Oral—Take a capsule filled with 5 drops each of copaiba and frankincense, and 1 drop each of nutmeg and vetiver, 2 times daily.

PTSD (POST-TRAUMATIC STRESS DISORDER)

Topical—Apply 2 drops each of blue tansy, lavender, orange, blue spruce, and frankincense to the bottoms of the feet, morning and evening. Apply 1 drop each of ylang ylang, geranium, and cedarwood over the liver area, 2 to 4 times daily. Apply 1 drop each of frankincense, vetiver, and

German chamomile to the base of the skull and behind the ears, 1 to 3 times daily. Place 1 drop of ylang ylang inside the belly button, morning and evening.

PULMONARY FIBROSIS

Oral—Take two capsules filled with 15 drops each of orange oil 3 times daily, or up to 0.013 ml per pound of body weight, daily (this amount may have to be worked up to slowly).

Inhalation—Place 15 drops of eucalyptus and 5 drops each of frankincense, peppermint, and lemon in a boiling pot of water, and cover head and bowl with towel to inhale, 1 to 2 times daily.

Topical—Mix 5 drops each of frankincense and eucalyptus and 2 drops wintergreen with 1 ounce of vegetable oil and apply to the back and chest, 2 times daily.

PULMONARY HYPERTENSION

Only use this protocol in conjunction with Western medical options and with approval from a physician.

Topical—Apply 1 to 3 drops each of eucalyptus, ylang ylang, marjoram, cypress, and lavender to the chest and upper back, 2 to 4 times daily.

Oral—Take a capsule filled with 5 drops of orange, and 2 drops each of clove, lavender, and ylang ylang.

Inhalation—Place 2 drops each of eucalyptus, rosemary, thyme, and lavender in 3 inches of hot water that is not too hot to touch with your hand, and cover head with towel to inhale, 1 or 2 times daily.

PYLORIC STENOSIS

Topical—*Infants:* Apply half a drop of fennel and/or German chamomile to the bottoms of the feet and stomach, 1 to several times daily. *Children 1 to 5 years old:* Apply 1 to drop each of fennel and German chamomile to the bottoms of the feet and stomach, 1 to several times daily.

PYTHIOSIS

Oral—Take a capsule filled with 5 drops of oregano, and 2 drops each of marjoram, peppermint, and rosemary, 3 to 4 times daily.

Topical—Apply 1 drop each of oregano, marjoram, peppermint, and rosemary to the affected area up to 6 times a day.

RABIES

Only use this protocol in conjunction with Western medical options and with approval from a physician.

Topical—Apply 2 drops each of eucalyptus, thyme, melaleuca (tea tree), and frankincense to the affected area, 2 to 4 times daily. Apply 1 drop each of blue spruce, vetiver, frankincense, and sandalwood to the base of the skull and behind the ears, 1 to 3 times daily. Apply 8 to 10 drops of orange oil on the feet, 2 times daily.

Oral—Take a capsule filled with 5 drops each of cinnamon and oregano and 1 drop each of eucalyptus, melaleuca (tea tree), and thyme, 1 to 3 times daily.

RADIATION EXPOSURE

Topical—Apply 1 to 2 drops of melaleuca (tea tree), cypress, or sandalwood over the thyroid area, 1 to 3 times daily.

Oral—Take a capsule filled with 4 drops each of frankincense, orange, and clove, and 1 drop of eucalyptus, 2 times daily.

RASH

Topical—Apply 1 to 4 drops of lavender, German chamomile, or melaleuca (tea tree) to affected area as needed.

RATHKE'S CLEFT CYSTS

Topical—Apply 1 to 2 drops of vetiver, frankincense, cedarwood, helichrysum, and myrrh to the base of the skull and behind the ears, 2 to 4 times daily.

Oral—Take a capsule filled with 5 drops each of frankincense, vetiver, and cedarwood, 2 to 3 times daily.

RAYNAUD'S SYNDROME

Topical—Apply 1 to 2 drops each of cypress, helichrysum, and cedarwood to the area of poor circulation, 3 to 5 times daily.

Oral—Take a capsule filled with 2 drops each of lemongrass, cypress, clove, ginger, rosemary, marjoram, and cinnamon, morning and evening.

REACTIVE ATTACHMENT DISORDER

Topical—Apply 1 drop each of vetiver, ylang ylang, frankincense, blue tansy, and lavender to the shoulders and back of the neck, 1 to 3 times daily. Apply 8 to 10 drops of orange oil to the feet, 1 to 2 times daily.

RESTLESS LEGS

Topical—Massage 2 to 5 drops of basil, lavender, German chamomile, and/or cedarwood to the lower legs and bottoms of the feet before going to bed.

RHEUMATIC FEVER

Only use this protocol in conjunction with Western medical options and with approval from a physician. Oral—Take 1 capsule filled with 2 drops each of clove, oregano, lemon, cinnamon, and 1 drop of eucalyptus, 2 to 3 times daily.

Topical—Apply 1 to 3 drops each of thyme, eucalyptus, and melaleuca (tea tree) to the bottoms of the feet and over the carotid arteries, 2 to 4 times daily.

RHINITIS

Topical—Apply 1 to 3 drops of lavender, eucalyptus, and peppermint to the forehead and bridge of the nose, 2 to 4 times daily.

Inhalation—Rub eucalyptus, peppermint, or lavender together in your palms and cup over nose and mouth to inhale.

RINGWORM

Topical—Apply 2 drops each of lemongrass, rosemary, melaleuca (tea tree), and lavender in a teaspoon of carrier oil to the affected area 3 times daily. Apply a drop of each oil in 1 teaspoon of carrier oil or shampoo and massage into scalp, once daily.

Oral—Take a capsule with 3 drops each of lemongrass, oregano, and cinnamon, and 1 drop of

melaleuca (tea tree) 2 to 3 times daily.

ROSACEA

Topical—Create a mixture of 1 drop each of melaleuca (tea tree), lavender, and German chamomile in 1 teaspoon of carrier oil (preferably jojoba) and apply a small amount of this mixture to the affected area up to 3 times daily.

Oral—Take a capsule filled with 3 drops each of German chamomile, lavender, and lemon, morning and evening.

RSV (RESPIRATORY SYNCYTIAL VIRUS)

Topical—Adults apply 2 drops each of clove, oregano, eucalyptus, thyme, and cinnamon to the feet, 3 to 5 times daily. Adults and older children apply 3 drops each of myrtle, eucalyptus, copaiba, and peppermint in 1 teaspoon of vegetable oil to the chest and back every 15 to 30 minutes.

Inhalation—Adults place 6 to 10 drops each of eucalyptus and peppermint in a boiling pot of water, cover head and bowl with towel to inhale, 1 to 3 times daily.

Oral—Adults take 1 capsule filled with 2 drops each of clove, oregano, lemon, cinnamon, and 1 drop of eucalyptus, 2 to 3 times daily.

RUBELLA (GERMAN MEASLES)

Only use this protocol in conjunction with Western medical options and with approval from a physician.

Topical—Soak a cloth in 1 drop each of melaleuca (tea tree), eucalyptus, lavender, and German chamomile and 1 cup of cool water and wipe rash with cloth several times daily. For aching joints, apply 2 drops each of lemongrass, eucalyptus, balsam fir, copaiba, and marjoram in a carrier oil to affected area, 2 to 4 times daily.

Oral—Take a capsule filled with 2 drops each of German chamomile, lavender, and oregano and 1 drop each of eucalyptus and melaleuca (tea tree), 2 to 3 times daily.

SARCOIDOSIS

Oral—Take a capsule filled with 5 drops of ginger, and 2 drops each of copaiba, vetiver, frankincense, and German chamomile, 1 to 2 times daily. Take a second capsule with 5 drops each of orange, peppermint, and lemon, once daily.

Topical—Apply 2 to 3 drops each of ginger, myrtle, and eucalyptus to the chest and upper back, 1 to 2 times daily. Apply 3 to 5 drops of oregano, thyme, basil, cypress, myrtle, ginger, and peppermint (layered in that order, 1 at a time) to the spine and massage into back on either side of the spine, 2 to 4 times weekly.

Inhalation—Place 2 drops each of eucalyptus, rosemary, thyme, and ginger in 3 inches of hot water that is not too hot to touch with your hand, and cover head with towel to inhale, 1 or 2 times daily.

SCABIES

Topical—Apply 1 to 2 drops each of melaleuca (tea tree), clove, lemongrass, and lavender to the area, 2 to 4 times daily.

SCARLET FEVER (SCARLATINA)

Oral—Take a capsule filled with 2 drops each of cinnamon, lemongrass, peppermint, and 1 drop each of thyme, melaleuca (tea tree), and eucalyptus, 2 to 3 times daily. Gargle and swish with 1 drop of

melaleuca (tea tree) up to 3 times daily.

Topical—Children 5 and under, apply 1 drop each of melaleuca (tea tree), lemongrass, and thyme to the bottoms of the feet (diluted appropriately according to age), 3 to 4 times daily.

SCARRING

Topical—Apply 1 to 2 drops of frankincense, lavender, cistus, and helichrysum on and widely around the scar, 2 to 3 times daily until improved.

SCHIZOPHRENIA

Only use this protocol in conjunction with Western medical options and with approval from a physician.

Topical—Apply 2 drops each of vetiver, frankincense, and lavender behind the ears and on the crown of the head, and then apply the excess to the top of the big toes, 2 to 4 times daily. Apply 3 drops of orange oil on the bottoms of the feet, 2 to 4 times daily.

SCIATICA

Topical—Apply 1 to 3 drops of frankincense, helichrysum, lemongrass, cistus, and balsam fir on sciatic joint and down leg, 2 to 3 times daily.

Oral—Take a capsule filled with 5 drops each of balsam fir, lemongrass, and helichrysum, 1 to 3 times daily.

SCLERITIS (EPISCLERITIS)

Topical—Mix 2 drops each of basil, frankincense, German chamomile, lavender, copaiba, and helichrysum in 1.5 to 2 teaspoons of carrier oil (preferable grapeseed) and apply a couple of drops of this mixture widely around the eye and behind the ears, several times daily.

Oral—Take a capsule filled with 7 drops copaiba, 5 drops frankincense, and 3 drops cypress, 1 to 3 times daily.

SCLERODERMA

Topical—Apply 1 drop each of frankincense, cistus, lemongrass, myrrh, and German chamomile to affected area, 2 to 4 times daily.

SCOLIOSIS

Topical—Apply 3 to 5 drops of oregano, thyme, basil, cypress, wintergreen, marjoram, and peppermint (layered in that order, 1 at a time) to the spine and massage into back on either side of the spine, 2 times weekly.

SEIZURES

Topical—Apply 1 to 3 drops each of frankincense, vetiver, sandalwood, and basil to the scalp, 3 times daily. Apply 3 to 5 drops of oregano, thyme, basil, cypress, lemongrass, marjoram, and balsam fir (layered in that order, 1 at a time) to the spine and massage into back on either side of the spine, weekly.

SENSORY PROCESSING DISORDER

Topical—Apply 1 to 2 drops each of frankincense, myrtle, vetiver, and sandalwood to the forehead and behind the ears, 1 to 3 times daily. Apply 1 to 3 drops of blue spruce to both sides of the neck, 1

to 3 times daily. Apply 8 to 10 drops of orange oil to the bottoms of the feet, 1 to 2 times daily.

SHINGLES

Topical—Apply 2 to 3 drops each of clove, eucalyptus, lemon, peppermint, and melaleuca (tea tree) to the affected area and along the spine, 2 to 3 times daily.

Oral—Take a capsule with 4 drops of peppermint, 3 times daily.

SHIN SPLINTS

Topical—Apply 1 to 2 drops each of balsam fir, copaiba, lemongrass, peppermint, and wintergreen on both shins, 2 to 3 times daily.

Oral—Take a capsule filled with 5 drops each of balsam fir, copaiba, and frankincense, 1 to 3 times daily.

SHOCK, EMOTIONAL

Inhalation—Apply 1 to 2 drops of lavender or peppermint in palms and place near nose to inhale.

Topical—Place 1 drop of peppermint directly on the sternum.

SINUS HEADACHE

Topical—Apply 2 to 3 drops of eucalyptus, rosemary, or peppermint to your hands, rub together, and inhale, several times daily. Apply 1 to 2 drops neat or diluted over the sinuses and on the temples.

Apply 2 to 4 drops of oil to the soles of the feet just before bedtime.

SINUSITIS (SINUS INFECTION)

Topical—Apply 1 to 3 drops of melaleuca (tea tree), eucalyptus, pine, and/or peppermint on forehead, nose, cheeks, chest, and upper back, 3 to 5 times daily.

Oral—Take a capsule filled with 1 to 2 drops each of eucalyptus, pine, myrtle, and lemon 1 to 2 times daily; and take 1 drop of lavender on or under the tongue, 1 to 3 times daily.

Inhalation—Apply 2 to 3 drops of peppermint, eucalyptus, or melaleuca (tea tree) in palms and cup over nose and mouth to inhale as often as needed. Add 2 to 3 drops of peppermint, eucalyptus, and melaleuca (tea tree) to hot water and breathe deeply through your nose over the mixture. Hold your breath as long as you can and then exhale through your mouth. Repeat this for a few minutes.

SJOGREN'S SYNDROME

Oral—Take a capsule filled with 3 drops each of frankincense, vetiver, and copaiba and fill the rest of the capsule with evening primrose oil and take this 2 to 4 times daily.

Topical—Apply 1 drop of lavender diluted widely around each eye, 1 to 3 times daily for eye discomfort.

Inhalation—To manage stress, add 1 to 2 drops each of lavender, ylang ylang, and orange to a tissue and inhale as necessary throughout the day.

Other—Suck on sugar-free chewing gum to keep the mouth moist.

SKEETER SYNDROME

Topical—Apply repeated doses of 1 drop each of melaleuca (tea tree), lemongrass, and basil to affected area until irritation subsides, and then continue applying 1 drop every 2 hours for the next 8 hours.

SKIN TAG

Topical—Apply 1 drop of oregano, lemon, or frankincense to the skin tag, 2 to 4 times daily until it falls off.

SKIN ULCER

Topical—Apply 4 to 6 drops of lavender, helichrysum, myrrh, or German chamomile to affected area, 1 to 3 times daily.

SMALL INTESTINAL BACTERIAL OVERGROWTH (SIBO)

Oral—Take a capsule filled with 5 drops each of peppermint, lemongrass, and orange, 1 to 3 times daily.

Other—Take a high-potency probiotic, 4 times daily.

SMELL, LOSS OF SENSE OF (ANOSMIA)

Topical—Apply 1 to 3 drops of basil and/or melaleuca (tea tree) to the sinus areas and on the sinus vita flex point, up to 3 times daily.

SMOKING CESSATION

Oral—Lick a trace amount of eucalyptus off the back of your hand any time you are tempted to smoke.

Inhalation—Apply 2 drops of lavender, cinnamon, or grapefruit to the palms, cup over nose and mouth, and inhale as needed. Black pepper is also a great option for inhalation.

SNAKE BITE

If the bite was from a poisonous snake seek medical attention immediately.

Topical—Apply 3 to 5 drops of clove, eucalyptus, or melaleuca (tea tree) to the bite every 15 minutes until medical attention is available.

Oral—Take a capsule filled with 4 drops each of helichrysum, clove, coriander, and juniper every 2 hours.

SORE THROAT

Oral—Gargle with 1 to 2 drops each of lemon, peppermint, eucalyptus, and clove every 1 to 3 hours (mix with honey for better results) and swallow mixture until symptoms improve. Take a capsule with 3 drops each of peppermint and lemon, and 1 drop of eucalyptus, thyme, and melaleuca (tea tree), 2 times daily for the next 3 to 4 days.

Topical—Apply 1 to 3 drops of frankincense, melaleuca (tea tree), and/or eucalyptus over the throat area of the neck and cover with a warm wet towel, 2 times daily.

SPASMODIC DYSPHONIA

Topical—Apply a mixture of 2 drops myrrh and 1 drop each of copaiba, blue spruce, vetiver, rosemary, and melaleuca (tea tree) to the throat, 3 to 5 times daily.

SPRAINS

Topical—Massage 2 drops each of copaiba, basil, wintergreen, and balsam fir on affected area, several times daily.

Other—Apply a cold compress, 2 times daily.

SQUAMOUS CELL CARCINOMA

Topical—Apply 2 to 4 drops each of sandalwood, frankincense, geranium, cinnamon, and cypress to the affected area, 3 to 5 times daily. Apply 8 to 10 drops of orange oil to the bottoms of the feet, 2 to 3 times daily. Apply more geranium and helichrysum as the area begins to heal to prevent scarring.

Oral—Take 0.018 to 0.045 ml of enriched frankincense or frankincense per pound of body weight (for example, a 150-pound person would take 2.7 to 6.75 ml daily) in 3 to 6 divided doses throughout the day with food for 21 days.

Other—Intermittent fasting (only consuming water) for 24 hours, 2 times weekly, or 48 hours once weekly. Alternately, some practitioners recommend fasting for 30-plus days drinking only vegetable and fruit juices. Make sure they don't have added sugar.

STAPH INFECTION

Topical—Apply 1 to 3 drops each of oregano, thyme, and eucalyptus to affected area, 3 to 5 times daily.

Inhalation—Place 3 to 5 drops each of eucalyptus, melaleuca (tea tree), and juniper in 3 inches of hot water not too hot to touch with your hand, and cover head with towel to inhale every 2 to 4 hours.

Oral—Take 1 capsule filled with 3 drops each of clove, oregano, lemon, cinnamon, and 1 drop of eucalyptus, 2 to 3 times daily.

STOMACH FLU

[See GASTROENTERITIS](#)

STOMACHACHE

Topical—Apply one or a combination of peppermint, ginger, and/or juniper to abdomen (may require dilution) until stomachache subsides.

Oral—Ingest a combination of juniper, peppermint, and ginger every two hours, or until stomachache subsides.

STREP THROAT

Oral—Take 1 capsule filled with 3 drops each of clove, oregano, lemon, cinnamon, and 1 drop each of melaleuca (tea tree) and eucalyptus, 3 to 4 times daily. Gargle with 1 to 2 drops each of lemon, cinnamon, eucalyptus, and clove every 1 to 3 hours (mix with honey for better results) and swallow mixture.

Topical—Dilute heavily and apply 1 to 3 drops of oregano, lemongrass, thyme, and eucalyptus over the throat.

STRESS

Topical—Apply 2 drops each of cedarwood, lavender, and lime to the bottom of the feet as needed.

Inhalation—Apply 1 drop each of lavender, cedarwood, and lime to the palms and cup over nose and mouth to inhale, 2 to 4 times daily.

STROKE

Seek medical attention immediately.

Topical—Apply 1 to 2 drops each of frankincense, cypress, helichrysum, cistus, and lavender to the temples, forehead, back of the neck, and throat, 2 to 4 times daily. Apply 3 to 5 drops of oregano, thyme, basil, cypress, wintergreen, marjoram, and peppermint (layered in that order, 1 at a time) to the spine and massage into back on either side of the spine, 2 times weekly.

Oral—Take a capsule filled with 3 drops each of frankincense, cypress, helichrysum, and cistus, 1 to 3 times daily, or place 1 drop of each on the tongue.

STY (STYE)

Topical—Apply 1 drop of lavender and frankincense on each palm and rub together, cup palms over eyes with eye open, and allow essential oils to evaporate for 1 minute, 2 to 4 times daily. Apply 1 drop of lavender widely around the eye (following the orbit). *Note:* Some report good success by placing a drop of lavender on a Q-tip and then swabbing the sty with the Q-tip, though this is not recommended as oils may get in the eye.

Other—Apply a warm compress over the eye, several times daily.

SUN FUNGUS

(TINEA VERSICOLOR)

Topical—Apply 1 to 2 drops each of rosemary, melaleuca (tea tree), lemongrass, and lavender to the area two to four times daily.

SUNBURN

Topical—Apply enough drops of lavender, balsam fir, or peppermint to cover affected area as often as needed.

SUNSCREEN

Topical—Mix together 4 drops each of myrrh, helichrysum, peppermint, and lavender, and 2 drops helichrysum in 2 ounces of sesame seed oil and apply generously (reapply every 2 to 4 hours).

SWEATING, EXCESS

Topical—Dilute and apply 1 to 2 drops of melaleuca (tea tree) under each arm, 1 to 3 times daily.

SWIMMER'S EAR (OTITIS EXTERNA)

Topical—Apply 1 to 2 drops each of melaleuca (tea tree), basil, and thyme around the ear and on the fleshy part of the ear. Place 1 drop of melaleuca (tea tree) or basil on a cotton ball and place the cotton ball in the ear. Replace every 30 minutes for the first 4 hours and then every 4 hours thereafter.

TACHYCARDIA

Topical—Apply 2 to 4 drops of ylang ylang, goldenrod, and rosemary over the heart, 2 to 4 times daily.

Inhalation—Apply 1 drop each of lavender, cedarwood, and German chamomile to the palms, rub together, and inhale as often as needed.

TARLOV CYSTS

Topical—Apply 1 drop each of frankincense, basil, sandalwood, vetiver, and lemongrass to the affected area, 1 to 3 times daily.

Oral—Take a capsule filled with 5 drops each of frankincense, orange, and lemongrass, 1 to 3 times daily.

TEETH, SENSITIVE

Topical—Apply 1 to 2 drops of clove or wintergreen to the teeth and gums experiencing sensitivity, 1

to 3 times daily.

TENDINITIS

Topical—Apply 1 to 2 drops each of lemongrass, marjoram, basil, and wintergreen to the affected area, 4 to 5 times daily.

TETANUS (LOCKJAW)

Only use this protocol in conjunction with Western medical options and with approval from a physician.

Topical—To prevent tetanus, thoroughly cleanse all wounds and then apply 1 drop each of tea tree, eucalyptus, and lemongrass to the wound before covering with a bandage. Replace bandage and reapply oils, 3 times daily.

Oral—Take 1 capsule filled with 2 drops each of clove, cinnamon, melaleuca (tea tree), oregano, and rosemary, 3 times daily.

THRUSH (ORAL)

Oral—Gargle with 2 drops each of clove, cinnamon, copaiba, and lemon in 4 ounces of water, several times daily.

Topical—Apply 2 drops each of clove, cinnamon, and lemon on the bottom of the feet, 3 to 5 times daily. For infants with thrush, apply a trace of lavender, lemon, or copaiba to mother's nipple just before nursing.

THRUSH (VAGINAL)

Retention—Mix two tablespoons of carrier oil with 1 drop each of clove, cinnamon, and copaiba, place on tampon, and insert in vagina; replace every 2 to 4 hours.

Oral—Take a capsule filled with 4 drops each of clove, cinnamon, lemon, and copaiba, 2 to 4 times daily.

THYROID NODULES

Topical—Apply 1 drop each of frankincense, balsam fir, myrtle, German chamomile, and nutmeg to the neck over the thyroid area of the neck, morning and evening.

Oral—Take a capsule filled with 5 drops of frankincense, and 2 drops each of orange, lemon, grapefruit, and clove, 1 to 3 times daily.

TICK BITES

Other—Remove the tick with fine-tipped tweezers by grasping the tick as close to the skin as possible and pulling upward with even, steady pressure. Do not twist or jerk, which may leave the head of the tick in the body. Also, consider applying oregano to the tick to facilitate removal.

Topical—Apply 1 drop of lavender or melaleuca (tea tree) to tick bite every 15 minutes for the first hour, and then hourly for the next 4 to 8 hours.

TICK REPELLENT

Topical—Mix together 12 drops each of geranium, rosemary, marjoram, and lavender with half cup of distilled water, one-third cup witch hazel extract, and 1 teaspoon of vegetable glycerin. Shake well and apply to exposed skin and clothes before going outdoors.

TINNITUS

Topical—Apply a 1 drop each of basil, helichrysum, geranium, and lavender on temples, forehead, back of neck, around the ear, and on the fleshy part of the ear, and then pull earlobe in a circular motion 10 times to enhance absorption, 3 times daily.

Other—Apply 1 to 2 drops of helichrysum on a cotton ball and leave in overnight.

TMJ (TEMPOROMANDIBULAR JOINT SYNDROME)

Topical—Massage 1 drop each of wintergreen, peppermint, goldenrod, and blue spruce to both jaws, 2 to 4 times daily.

TOENAIL FUNGUS

Topical—Soak foot in Epsom salts (use coarse sea salt for diabetics) bath by adding 3 drops each of lavender and melaleuca (tea tree) to a handful of salts and adding to warm water. After soak, apply 1 drop each of oregano, lemongrass, myrrh, and melaleuca (tea tree). Once cleared up, apply 1 drop each of grapefruit and lavender, 3 times daily to stimulate repair and growth of toenail.

TONSILLITIS

Oral—Take a capsule filled with 3 drops each of cinnamon, lemongrass, and oregano, and 1 drop of eucalyptus, 1 to 3 times daily. Gargle with 1 to 2 drops each of lemon, cinnamon, eucalyptus, and clove every 1 to 3 hours (mix with honey for better results) and swallow mixture.

Topical—Dilute heavily and apply 1 to 3 drops of oregano, lemongrass, thyme, and eucalyptus on the throat. Cover with a warm compress, 2 times daily.

TOOTHACHE

Topical—Apply 1 to 2 drops of clove and/or peppermint to the gums and tooth.

TOURETTES SYNDROME (TURRETS SYNDROME)

Topical—Apply 1 to 2 drops of vetiver, frankincense, cedarwood, and blue spruce behind the ears and at the base of the skull, 1 to 3 times daily. Apply 8 to 10 drops of orange oil to the bottoms of the feet, 1 to 2 times daily.

Oral—Take a capsule filled with 1 to 2 drops each of vetiver, frankincense, marjoram, and lavender, 2 to 4 times daily.

TOXOPLASMOSIS

Topical—Apply 1 drop each of nutmeg, lemongrass, and thyme diluted heavily widely around the eye, 3 to 4 times daily.

Oral—Take a capsule filled with 3 drops each of ginger, lemongrass, oregano, peppermint, and lemon and 1 drop of thyme and nutmeg, 1 to 2 times daily.

TRAUMA RECOVERY

Topical—Apply 1 drop each of blue spruce (or black spruce), frankincense, and German chamomile to the breastbone up to 3 times daily.

Inhalation—Place 1 drop each of blue or black spruce, frankincense, and German chamomile on a tissue and inhale as needed.

TUBERCULOSIS

Inhalation—Place 2 to 3 drops each of peppermint, eucalyptus, myrtle, and rosemary in 3 inches of

hot water that is not too hot to touch with your hand and cover head with towel to inhale every 2 to 4 hours.

Oral—Take a capsule filled with 3 drops each of clove, vetiver, oregano, lemon, and 1 drop of eucalyptus, myrtle, and melaleuca (tea tree), 2 to 3 times daily.

Topical—Apply 6 to 10 drops of eucalyptus, myrtle, and/or rosemary to chest and upper back, 2 to 3 times daily.

TYPHOID FEVER

Only use this protocol in conjunction with Western medical options and with approval from a physician.

Topical—Apply 4 to 6 drops of basil and/or peppermint to the lower abdomen and along the spine, 2 to 4 times daily.

Oral—Take a capsule filled with 3 drops each of basil, oregano, and cinnamon, and 1 drop of eucalyptus, 1 to 3 times daily.

ULCERS (DUODENAL)

Topical—Apply 2 to 3 drops of frankincense, German chamomile, or lavender to the stomach area, 3 to 5 times daily.

Oral—Take a capsule filled with 3 drops each of frankincense, lemon, German chamomile, and lavender, 1 to 3 times daily.

ULCERS (GASTRIC OR PEPTIC)

Topical—Apply 2 to 3 drops of copaiba, German chamomile, peppermint, or lemongrass to the stomach area, 3 to 5 times daily.

Oral—Take a capsule filled with 3 drops each of lemongrass, copaiba, German chamomile, and lavender, 1 to 3 times daily.

URINARY RETENTION

Other—Place 3 to 4 drops of peppermint in the toilet or other urine collecting water before sitting over water to urinate.

Oral—Drink 2 drops of juniper oil in a beverage (possibly cranberry juice), 1 to 3 times daily until urine is released.

Topical—Apply 1 to 2 drops of juniper over the pelvic area, 1 to 3 times daily.

URINARY TRACT INFECTION

Oral—Take 1 capsule filled with 2 drops each of clove, oregano, lemon, cinnamon, and 1 drop of eucalyptus every 15 minutes for 1 hour, and then 3 to 6 times daily thereafter.

Topical—Apply 2 drops each of clove, oregano, eucalyptus, and cinnamon to the bottoms of the feet, 2 to 3 times daily. Apply 3 drops each of juniper, oregano, and frankincense with 10 drops of vegetable oil to the pelvic area, 1 to 3 times daily.

Other—Drink two 8-ounce glasses of unsweetened cranberry or blueberry juice daily for 3 to 5 days.

UTERINE FIBROIDS

Topical—Apply 3 to 5 drops each of frankincense, cypress, and geranium on the lower abdomen, 2 to 4 times daily.

Oral—Take a capsule filled with 5 drops each of frankincense, orange, and sandalwood, 1 to 3 times

daily.

Retention—Mix 8 drops each of frankincense, sandalwood, and cypress with 1 tablespoon of carrier oil, apply mixture to tampon, and retain overnight.

VARICOCELES

Topical—Mix 10 drops each of geranium and cypress with 5 drops of German chamomile in 1 tablespoon of vegetable oil and apply daily to the scrotum.

VAGINAL ATROPHY

(ATROPHIC VAGINITIS)

Topical—Apply 2 to 4 drops of clary sage on the mons pubis area, 1 to 3 times daily. Apply 1 to 2 drops each of melaleuca (tea tree), copaiba, and geranium diluted in 2 teaspoons of carrier oil) to the labia and around the entrance to the vagina, 1 or 2 times daily.

Other: Consider a natural bioidentical progesterone.

VAGINAL YEAST INFECTION

Retention—Mix 2 drops each of rosemary, melaleuca (tea tree), thyme, and oregano with 1 tablespoon of carrier oil, put on tampon, and insert into vagina, replacing every 4 hours.

Oral—Take a capsule filled with 3 drops each of lemongrass, oregano, and rosemary, and 1 drop of eucalyptus, 1 to 3 times daily.

VAGINITIS

Retention—Mix 2 drops each of rosemary, melaleuca (tea tree), thyme, and oregano with 1 tablespoon of carrier oil, put on tampon, and insert into vagina, replacing every 4 hours.

Oral—Take a capsule filled with 3 drops each of cinnamon, oregano, vetiver, and 1 drop of eucalyptus, morning and evening.

VARICOSE VEINS

Topical—Apply 2 to 3 drops each of lemongrass, geranium, and cypress mixed in some grapeseed carrier oil to the areas around the varicose veins (not directly on them) with massage strokes towards the direction of the heart, 1 to 3 times daily.

VENOUS REFLUX DISEASE

Topical—Apply 2 drops each of cypress, lemongrass, and helichrysum, and 1 drop of peppermint to both legs, 1 to 3 times daily, diluted in aloe vera.

VERTIGO

Topical—Apply 1 drop each of ginger, frankincense, and cypress behind the ears and to the temples.

Oral—Take a capsule with 2 drops each of ginger, basil, cypress, and frankincense up to 3 times daily.

Inhalation—Place 1 drop each of peppermint, ginger, and cypress in 1 palm, rub together with other palm, and cup hands over mouth and nose to inhale as often as necessary.

Other—Apply 1 drop of helichrysum on a cotton ball and place cotton ball in ear overnight; repeat for both ears.

VIRAL MENINGITIS

Only use this protocol in conjunction with Western medical options and with approval from a

physician.

Topical—Apply a mixture of 2 drops each of oregano, lemongrass, melaleuca (tea tree), and thyme to the spine and bottoms of the feet (diluted appropriately for children), 3 to 5 times daily. Apply 1 to 3 drops of lemon (older children and adults can use lemon and/or peppermint) to the spine, 2 to 4 times daily for fever. Apply 1 to 2 drops each of lavender and marjoram to the neck and forehead for neck pain or headache.

Inhalation—For nausea or vomiting, apply 1 drop each of lemon and ginger to your palms, rub together, and cup over your nose and mouth to inhale as needed.

Oral—Take a capsule filled with 3 drops each of oregano, lemongrass, and cinnamon, and 1 drop each of thyme and melaleuca (tea tree), 2 to 4 times daily.

VOMITING

Inhalation—Apply 1 to 2 drops of peppermint or ginger to palms and cup over nose and mouth to inhale as needed.

Topical—Apply 1 to 2 drops of peppermint or ginger to the stomach area as needed.

WARTS

Topical—Apply 1 drop of oregano, thyme, or frankincense to warts, 3 times daily.

WARTS (SEED)

Other—Apply small squares of duct tape over seed warts and replace each time the duct tape falls off until wart is gone.

Topical—Apply 1 drop of oregano, thyme, or frankincense to seed warts, 3 times daily (do not apply duct tape over oils).

WEIGHT MANAGEMENT

Oral—Take a capsule filled with 10 drops of grapefruit or lemongrass (or 5 drops of each) oil, 2 to 3 times daily.

Other—Decrease caloric intake, increase caloric expenditure, and manage stress.

WEST NILE VIRUS

Oral—Take a capsule filled with 3 drops each of oregano, lemongrass, frankincense, and peppermint, and 1 drop each of thyme, melaleuca (tea tree), and eucalyptus, 1 to 3 times daily.

Topical—Apply 3 to 5 drops of oregano, thyme, basil, cypress, wintergreen, marjoram, and peppermint (layered in that order, 1 at a time) to the spine and massage into back on either side of the spine, 3 times per week.

WHOOPING COUGH (PERTUSSIS)

Inhalation—Place 2 to 3 drops each of rosemary or pine, eucalyptus, and/or myrtle in 3 inches of hot water that is not too hot to touch with your hand and cover head with towel to inhale every 2 to 4 hours.

Topical—Apply oregano, thyme, clove, and eucalyptus to the bottoms of the feet, 3 to 5 times daily. Apply thyme, cypress, eucalyptus, and myrtle to the chest and cover with a warm compress, 1 to 3 times daily.

WOLFF-PARKINSON-WHITE SYNDROME

Topical—Apply 2 to 4 drops of ylang ylang, goldenrod, and/or rosemary on the chest morning and night, Apply 1 drop each of eucalyptus, myrtle, and peppermint to the upper back if shortness of breath occurs. Also, apply 1 to 2 drops of peppermint to the palms, rub together, and inhale.
Inhalation—Apply 1 drop each of lavender, ginger, and peppermint to your palms, rub together, and cup over nose and mouth to inhale as often as needed during dizzy spells.

WOUNDS

Topical—Apply 1 to 2 drops each of frankincense, copaiba, cedarwood, and lavender to the wound, several times daily to promote healing. Apply 1 to 2 drops of lemongrass, melaleuca (tea tree), and rosemary to disinfect and protect the wound from germs.

WRINKLES

Topical—Apply 1 to 2 drops of frankincense, sandalwood, or helichrysum to wrinkles, morning and evening. Mix in avocado or apricot kernel oil to enhance the benefits.

XANTHOMAS

Oral—Take a capsule filled with 5 drops each of lemongrass, clove, and cinnamon, morning and evening.

Topical—For those occurring in the eye, soak a piece of cloth in 1 drop of cypress, a pinch of salt, and 1 cup of tepid water; wring out excess water from cloth and apply over closed eye. For xanthomas in other locations, apply 1 drop each of lemongrass and cypress to the area, several times daily.

YELLOW FEVER

Only use this protocol in conjunction with Western medical options and with approval from a physician.

Oral—Take a capsule with 3 drops each of lemongrass, peppermint, oregano, lemon, and 1 drop each of basil and thyme, 3 to 4 times daily. Continue taking capsules for 2 weeks following reversal of symptoms, but no longer than 21 days total.

Topical—Apply 3 drops of lemongrass, oregano, peppermint, and lemon over the liver area of the chest, 2 times daily. Alternately, massage the feet with 1 drop each of lemongrass, oregano, peppermint, lemon, and thyme up to 6 times daily.

ESSENTIAL OILS FOR INFANTS AND CHILDREN

Our children are extremely precious, and as parents, we are the first responders when it comes to their health and well-being. Children get sick, and as parents we want to do everything in our power to make them feel better. When our actions don't provide our children relief, it can be a very frustrating experience. Without the proper knowledge and the right tools, caring for children can be an intimidating undertaking. As a parent, it is your right and responsibility to determine what health care your child receives and to determine whether the condition can be safely and effectively managed at home or requires professional care. Even better, an integrative minded pediatrician or family care practitioner trained in the use of natural remedies who properly balances Western and complementary approaches can be an incredible resource for the natural parents.

Essential oils are a valuable tool for the parents who seek to raise their children using what is found in nature. Many parents prefer natural options when it comes to the care of their children, but they may feel ill equipped to employ the healing power natural remedies possess. This hesitancy or uncertainty leads to frequent trips to the pediatrician's office, often to be told that the illness is caused by a virus for which Western medicine provides very limited support. Or the illness has occurred when the doctor's office is closed and you can't get in for several hours. Indeed, many pediatricians and other doctors now outsource their after-hours operations to third-party sources that are less qualified, provide very limited support, and do not know your family and child. These can be long nights for both the parents and the child, unless the parent is prepared to handle the situation at home.

Just as adults realize remarkable results when essential oils are used correctly, essential oils can be of great benefit to infants and children. In fact, children tend to respond to natural remedies more rapidly and completely than adults. However, unintended, adverse consequences can also occur with the use of natural remedies, particularly among children who are more receptive to the profound effects of essential oils. The old adage "less is more" is absolutely true with children and essential oils, and very small amounts of essential oils can provide rapid and far-reaching restoration in a child's body.

No parent wants to be responsible for being the cause of a trip to the doctor, and so a few cautions are warranted when using essential oils with children. When it comes to children and infants, it is important to use essential oils responsibly and to err on the side of caution. One need only review the scientific and medical literature—or perhaps talk to their integrative minded physician—to know that unintended reactions to essential oils do occur and are treated in doctor's offices, urgent care facilities, and hospitals.^[2371] Because of this, every effort has been made to thoroughly review the available literature and incorporate practical and clinical experience to determine what constitutes the safe use of essential oils for children.

Some believe that parents are incapable of caring for the well-being of their children alone. But the reality is a parent can choose to receive directions for the care of their children from a trained physician (who will intrinsically prescribe what he or she is trained on and comfortable with—synthetic chemical options) or a reliable resource—like a book—that shares detailed instructions

about how to use natural remedies effectively and safely.

However, as interest in more natural options grows among parents, so does the interest to learn how to use them safely among savvy physicians. An integrative minded physician trained in the use of essential oils and other natural products can be a huge asset to the natural parent! Ideally, you should work collaboratively and in partnership with an integrative minded physician for the care and treatment of your children.

This section is meant to provide foundational knowledge and a better understanding of the use of essential oils for the care of infants and children. As you discover the ease at which you are able to use essential oils for many of the common ailments your children face, your confidence will grow. You will also instill in your children an acceptance and trust of natural options that they can then pass on to their children and grandchildren. This cycle may lead to healthier generations that have returned to treatment options that past generations used successfully for hundreds of years.

Safety First!

As was mentioned earlier in this book, some essential oils should be avoided in young children, particularly those high in 1,8-cineole (eucalyptol), menthol, thujone, camphor, and methyl salicylate (wintergreen). As a review, peppermint, rosemary, eucalyptus, ravintsara, niaouli, camphor, bay laurel, Spanish sage, cardamom, spike lavender, and lavandin should be avoided in children under 3, particularly around the nose and mouth. Use each of these oils very cautiously, both topically and diffused, for children under age 5. Wintergreen and birch (both high in methyl salicylate) should not be used topically or diffused near children under age 12. A very, very small minority of children may respond adversely to the use of these oils, including central nervous system problems,^{[2372],[2373],[2374]} respiratory distress (difficulty breathing), and toxicity,^{[2375],[2376],[2377],[2378],[2379],[2380],[2381]} and this reaction can occur from inhalation only. Very young children, from age birth to 24 months, are more likely to experience adverse reactions because their breathing and airway defensive reflexes are still maturing.

Oral administration of essential oils is a parent choice—some choose to give their children essential oils orally (in a capsule, mixed with a fatty substance, etc.), while others choose not to. In some cases oral administration may be unnecessary if topical or aromatic administration is effective.

If you choose to do so, it should generally be reserved to children who are 6 or older, and when the child has the ability to communicate how the essential oils affect the way the child feels internally after taking the oil. This will help identify any gastrointestinal upset or discomfort that they may experience as a result. The smaller the child, the greater the risk for toxicity with oral administration. Please keep in mind that not all essential oils can be taken orally because of their chemical compounds, toxicity degree, or they may be a perfume grade not suitable for oral use. **Only take high-quality essential oils intended for therapeutic use orally.** Oils not intended for therapeutic use could cause harm if taken internally.

Some essential oils should not be applied on the skin before exposing that skin to the UV rays of the sun. These oils include angelica, bergamot, bitter orange, grapefruit, lemon, lime, and tangerine. These oils should be applied where the skin will not be exposed to sun (where clothes will cover or the soles of the feet), or sun exposure should be avoided for a minimum of 12 hours following their application.

If your child has very sensitive skin or has allergies or a chronic skin condition, it would be best to modify the dilution ratios from teaspoons to tablespoons of carrier oil. For example, if the dilution ratio calls for 2 drops of essential oil per teaspoon, you should mix 2 drops of essential oil per tablespoon of carrier oil.

Keep essential oils away from the eyes, and never apply essential oils directly into the ear canal. Instead, apply essential oils widely around the perimeter of the eyes (usually reserved for older children) or ear, and/or add a drop on a cotton ball and place this in the ear. Essential oils applied around the perimeter of the eyes must be massaged in completely to avoid any migrating into the eye itself. To avoid confusion some herbal oil tonics like garlic and mullein are available and applied directly in the ears. Keep in mind these are herbal extracts not essential oils and that this practice is considered safe.

If your child is currently taking medication, review the essential oils you intend to use for interactions with those medications, and reduce the amount of essential oil recommend by half.

The preferred and recommended essential oils will vary depending on the age and weight of the child. In general, you will blend the essential oils in the carrier oil before applying them to the skin. However, you may also apply the essential oils to the skin first and then cover with the appropriate amount of carrier oil. The following table can be used as a guide for appropriate essential oils and carrier oils as well as reasonable dilution ranges to follow when caring for your child.

AGE / WEIGHT	ESSENTIAL OILS, CARRIER OIL(S), AND DILUTION RANGE*
<p><i>Birth–12 months</i> 6–22 lb.</p>	<p>Preferred Essential Oils: <i>Bergamot, chamomile (Roman, German), copaiba, frankincense, geranium, grapefruit, lavender, lemon, lime, melaleuca (tea tree), neroli, orange (sweet), petitgrain, tangerine, thyme (for specific conditions)</i></p> <p>Preferred Primary Carriers: <i>Sweet almond, sunflower seed, apricot kernel, coconut, grapeseed</i></p> <p>Preferred Secondary Carriers: (Smaller amounts): <i>Olive oil (10%), jojoba (10%)</i></p> <p>Dilution Range: 0.3% dilution—1 drop of essential oil per 2 teaspoons of carrier oil</p>
<p><i>1–5 years</i> 23–44 lb.</p>	<p>Preferred Essential Oils: <i>Balsam fir, basil (linalool CT), bergamot, chamomile (Roman, German), cedarwood, cinnamon, cistus, clove, copaiba, cypress, frankincense, geranium, ginger, grapefruit, helichrysum, lavender, lemon, lime, melaleuca (tea tree), myrtle, neroli, orange (sweet), oregano, petitgrain, pine, rose, sandalwood, tangerine, thyme, vetiver, ylang ylang</i></p>

Preferred Primary Carriers:

Sweet almond, sunflower seed, grapeseed, apricot kernel, coconut, aloe vera

Preferred Secondary Carriers:**(Smaller amounts):**

Olive oil (10%), jojoba (10%), avocado (10%)

Dilution Range:

1.5%–3.0%; neat for some applications—2–4 drops of essential oil per teaspoon of carrier oil; neat applications undiluted

*6–11 years
45–77 lb.*

Preferred Essential Oils:

All essential oils except wintergreen and birch; caution with fennel is advised in prepubertal girls

Preferred Primary Carriers:

Sweet almond, grapeseed, apricot kernel, coconut, sesame seed, sunflower, aloe vera

Preferred Secondary Carriers:**(Smaller amounts):**

Olive oil (10%), jojoba (10%), avocado (10%)

Dilution Range:

1.5%–5.0%; neat for some applications—2–7 drops of essential oil per teaspoon of carrier oil; neat applications undiluted

*12–17 years
78–153 lb.*

Preferred Essential Oils:

All essential oils

Preferred Carrier Oils:

All carrier oils except St. John's wort

Dilution Range:

1.5%–20.0%; neat for some applications —2–30 drops of essential oil per teaspoon of carrier oil; neat applications undiluted

*18+ years
154+ lb.*

Preferred Essential Oils:

All essential oils

Preferred Carrier Oils:

All carrier oils

Dilution Range:

1.5%–Neat—2 drops of essential oil per teaspoon of carrier oil to undiluted

Once the appropriate mixture (blend) has been created, a small amount of this blend should be applied to the child. Preferred application sites include the area of discomfort, the soles of the feet, wrists, and abdomen. The face should generally be avoided. The mixture should be applied more regularly for an acute condition (3–6 times or more daily), and less often for a chronic condition (2–3 times daily). In addition, if a range is recommended for the particular condition, the higher number of drops should be used for acute conditions and the lower number for chronic conditions.

Methods of Application/Use

There are a number of ways in which to administer essential oils to children. Each can provide benefits, improved well-being, restoration of health, and mood enhancement.

Aromatic Baths:

Birth–12 months	1 drop EO/2 tsp. carrier oil
1–2 years	1–2 drops EO/1 tsp. carrier oil
3–4 years	2–3 drops EO/1 tsp. carrier oil
5–6 years	3–4 drops EO/1 tsp. carrier oil
7–12 years	3–5 drops EO/1 tsp. carrier oil
13–17 years	4–7 drops EO/1 tsp. carrier oil

Aromatic Compress:

Birth–2 years	Not recommended
2–3 years	1–2 drops EO
4–12 years	2–4 drops EO
13–17 years	2–5 drops EO

Aromatic Foot Bath:

Birth–2 years	Not recommended
2–5 years	1–3 drops EO/1 tsp. carrier oil
6–12 years	1–4 drops EO/1 tsp. carrier oil
13–17 years	2–5 drops EO/1 tsp. carrier oil

Diffusion:

Birth–12 months	1–2 drops EO
1–2 years	1–2 drops EO
3–4 years	2–4 drops EO
5–6 years	2–5 drops EO
7–12 years	2–6 drops EO
13–17 years	3–8 drops EO

Gargle (per half-cup warm water):

6–12 years	1 drop
13–17 years	1–3 drops

Inhalation (on cotton ball or tissue):

2–5 years	1–2 drops EO
6–12 years	1–3 drops EO
13–17 years	1–4 drops EO

Oral (in capsule, or with milk, honey, tea):

Birth–2 years	Not recommended
3–5 years	Very limited and only mild oils*
6–11 years	1–3 drops/dose (8 drops/day max)
12–17 years	1–5 drops/dose (15 drops/day max)

Pillow (add to underside on corner):

1–5 years	1–2 drops EO
6–17 years	1–3 drops EO

Spot Treatment (on a cotton swab or ball):

1–5 years	1 drop EO
6–12 years	1–2 drops EO
13–17 years	1–3 drops EO

Steam Inhalation (in 1 pint of hot water):

Birth–12 months	1 drop EO
1–2 years	1–2 drops EO
3–5 years	1–3 drops
6–12 years	2–4 drops EO
13–17 years	2–6 drops EO

Sublingual (under the tongue; mild oils*):

Birth–5 years	Not recommended
6–11 years	1 drop/dose
12–17 years	1–2 drops/dose

* Mild oils may include citrus oils, lavender, copaiba, frankincense, melaleuca (tea tree), and chamomile.

Homeopathic Remedies

In addition to essential oils, homeopathic remedies will be recommended when appropriate. It has been my experience that homeopathic remedies work well in conjunction with essential oils, and given their utmost safety record, they can be used with the smallest of children without fear of side effects or unintended consequences. Oral homeopathic remedies usually come in pellets that dissolve under the tongue or as a liquid. Homeopathics are also available as creams and ointments.

Homeopathic Remedies: Use

- Choose oral homeopathic remedies that are 6X, 6C, 30X or 30C potency for home use.
- Take homeopathic remedies with a clean mouth—rinsed and free of food. Ideally the teeth should not be brushed for one hour prior to or after taking the a homeopathic remedy orally.
- Allow the remedy to slowly dissolve under the tongue.
- If pellets are being used for children under 2, crush them between two spoons to create a powder and administer this powder in the mouth.
- Avoid touching the pellets if possible. Instead, pour the desired number of pellets into the bottle cap, and dump them directly into the mouth.
- Apply homeopathic creams and ointments directly on and widely around the affected area.
- For less serious complaints and mild illnesses, take the homeopathic remedy every 4 to 8 hours.
- The recommended dose should be taken every 30 minutes to 2 hours for more serious acute complaints.
- Take the remedy, 1 to 2 times daily for chronic complaints.

- Reduce the frequency of the dose as symptoms improve and stop administration when significant improvement of all symptoms is experienced.
- Be aware that homeopathic remedies may cause a temporary worsening of symptoms before relieving them. This is a good thing and an indication that the remedy is working. If this occurs you can reduce the dosing frequency.
- Only take the homeopathic form of the remedies mentioned. Nonhomeopathic forms of many of the remedies mentioned are highly toxic because they are not diluted infinitesimally.
- For more information on the homeopathic remedies recommended, see the brief remedy profiles in Appendix B.

HEALTH CONDITIONS

ACNE, NEWBORN

Topical—Mix 1 drop each of lavender, orange, and chamomile in 1 pint of water. Dip a cotton ball in this mixture and ring it out, and then rub the cotton ball over the affected area. Shake mixture well before each use. **Make sure to avoid areas near the eyes and mouth.**

ACNE, ADOLESCENT/TEENAGE

Topical—Mix together 1 cup of water, 1/2 pint of organic apple cider vinegar, and 2 drops each of basil, orange, and melaleuca (tea tree) in a jar. Dip a cotton ball in the mixture and apply to the affected area, morning and evening. Shake the mixture well before each use. Melaleuca (tea tree) may also be used neat for tough acne. **Keep essential oils away from eyes.**

ARTHRITIS (JUVENILE RHEUMATOID)

Topical—Mix together 3 drops each of ginger, frankincense, copaiba, balsam fir, and eucalyptus in 3 teaspoons of sesame seed oil and 1 teaspoon of aloe vera oil and gently apply a small amount of this mixture to the affected joints (age 6+).

Oral—Take 1 drop each of frankincense, ginger, and copaiba orally up to 3 times daily (6–11 years). Take 2 drops each of ginger and copaiba, and 1 drop of frankincense orally up to 3 times daily (12–17 years).

Aromatic Bath—Take a warm bath with 1 drop each of German chamomile, eucalyptus, ginger, and lavender in half a cup of Epsom salts (use coarse sea salt for diabetics) as needed.

ANXIETY

Inhalation—Place 1 drop each of lavender, cedarwood, and bergamot on a tissue and allow the child to inhale as desired (1–17 years).

Oral—Take 2 drops of lavender orally up to 3 times daily (6–17 years).

Topical—Mix together 5 drops each of lavender, orange, and cedarwood, and then apply 1 drop of this mixture with equal parts of carrier oil to the wrists; 1 part essential oil to 5 parts carrier may be used for ages 3 to 5 (3–17 years).

ASTHMA

These options can be used along with Western treatment options. An acute asthma attack (severe shortness of breath, coughing, wheezing, low peak expiratory flow) requires medical attention if it is more than a minor attack, or may require the use of a rescue inhaler if minor.

Topical—Mix together 1 drop each of ginger, myrtle, and pine in 1 teaspoon of carrier oil and apply a

small amount of this to upper back and chest (1–11 years). Mix together 2 drops each of ginger, myrtle, thyme, and pine in 1 teaspoon of carrier oil and apply a small amount of this to upper back and chest (12–17 years).

Inhalation—Place 1 drop each of frankincense and lavender on a cotton ball or tissue and have child inhale this whenever he/she feels an asthma attack coming on (1–5 years). Place 1 drop each of frankincense, pine, and balsam fir to a cotton ball or tissue and have child inhale this whenever he/she feels an asthma attack coming on (6–17 years).

ATHLETE'S FOOT

Aromatic Footbath—Soak foot in a foot bath with 1 drop each of melaleuca (tea tree) and lavender in half a cup of Epsom salts (use coarse sea salt for diabetics) and 1 tablespoon of apple cider vinegar, 2 times daily (2–17 years). Mix together 1 drop each of melaleuca (tea tree), lemongrass, and oregano in 1 teaspoon of carrier oil and apply a small amount to the affected area after soaking (2–5 years). Mix together 1 drop each of melaleuca (tea tree), lemongrass, and oregano in half a teaspoon of carrier oil and apply a small amount to the affected area after soaking (6–17 years).

ATTENTION DEFICIT DISORDERS (ADD and ADHD)

Topical—Create a mixture of 1 to 3 (appropriate for age) drops of vetiver and frankincense in 1 teaspoon of carrier oil and apply a small amount of this mixture to the back of the neck, crown of the head, and behind the ears several times daily to increase focus (2–17 years). For a calming effect create a mixture of 1 to 3 (appropriate for age) drops of cedarwood and chamomile in 1 teaspoon of carrier oil and apply a small amount of this mixture to the back of the neck, crown of the head, and behind the ears, several times daily (2–17 years).

Oral—Take a capsule filled with 1 drop each of cedarwood, lavender, and frankincense, 2 times daily (6–11 years). Take a capsule filled with 2 drops each of cedarwood, lavender, and frankincense, 2 times daily (12–17 years).

AUTISM

Topical—Create a mixture of 1 to 3 (appropriate for age) drops of vetiver, sandalwood, and frankincense in 1 teaspoon of carrier oil and apply a small amount of this mixture to the back of the neck, crown of the head, and behind the ears, several times daily to support healthy nervous system function. Apply 3 drops of orange oil neat to the bottoms of the feet, 3 times daily (6–11 years), dilute in 1 teaspoon of carrier oil (1–5 years) and apply a small amount of the mixture to the feet. For a calming effect create a mixture of 1 to 3 (appropriate for age) drops of cedarwood and chamomile in 1 teaspoon of carrier oil and apply a small amount of this mixture to the back of the neck, crown of the head, and behind the ears, several times daily.

Inhalation—Let the child choose one or more of the following oils and place 1 drop on a cotton ball or tissue to inhale as desired: lavender, ylang ylang, orange, or blue tansy.

BEDWETTING

Topical—Apply 1 drop of cypress mixed in 5 drops of carrier oil to the lower abdomen prior to retiring for bed.

Homeopathic Remedies—Give the child *quisetum 30C* if the bedwetting is a habit. *Causticum 30C* could be considered if the bedwetting is brought on by fear that something bad will happen to him or her.

BITES (ANIMAL)

The child should be seen by a physician to rule out rabies.

Topical—Create a mixture of 1 drop each of thyme, oregano, lavender, lemongrass, and German chamomile and apply this mixture neat to the bite every 15 minutes for the first 2 hours, and then once per hour for the next 24 to 48 hours (2–17 years). Dilute in half a teaspoon of aloe vera oil for children 1 years of age.

BITES (INSECT)

Topical—Apply repeated doses of a mixture of 1 drop each of lavender, basil, lemongrass, and melaleuca (tea tree) in 1 teaspoon of apple cider vinegar to the area until irritation subsides (6–17 years). Use 1 drop each of lavender, German chamomile, and melaleuca (tea tree) in 1 teaspoon of apple cider vinegar (1–5 years). Then continue application every 2 hours for the next 8 hours.

Homeopathic Remedies—Give the child apis 6C every 15 minutes until relief is achieved.

BLEEDING

Seek medical attention immediately if the blood spurts from the wound.

Topical—Apply 1 drop of lavender, cypress, or helichrysum neat near the bleed, and repeat every 5 minutes until bleeding stops (2–17 years). Dilute in 2 teaspoons of carrier oil for children birth to 12 months.

BLISTERS

Topical—Create a mixture of 1 drop each of lemon, lavender, and melaleuca (tea tree) in 5 teaspoons of carrier oil and apply a small amount of this mixture to the blister, several times daily (birth–12 months). Create a mixture of 1 drop each of melaleuca (tea tree), clove, and chamomile in 1 teaspoon of carrier oil and apply to the blister, several times daily (2–17 years).

BOILS

Topical—Create a mixture of 1 drop each of lavender, melaleuca (tea tree), and frankincense (or chamomile) in 1 teaspoon of carrier oil and apply a small amount of the mixture to the boil, several times daily (1–17 years). Place 1 drop of melaleuca (tea tree) on a bandage and apply to the boil for additional relief and healing.

BONES (BROKEN, FRACTURED)

Broken bones require more than essential oils. Seek medical attention to have the bone set and casted. This protocol is to help relieve pain and encourage normal healing. It should be followed for the duration that the cast is on applying oils for 3 weeks before resting 1 week, then repeating the application.

Topical—Create a mixture of 1 drop each of balsam fir, cypress, ginger, and helichrysum in 1 teaspoon of sesame seed carrier oil and apply a small amount of this mixture to the exposed skin around the cast, several times daily (1–5 years). Create a mixture of 2 drops each of balsam fir, cypress, ginger, lemongrass, and helichrysum in 1 teaspoon of sesame seed carrier oil and apply a small amount of this mixture to the exposed skin around the cast, several times daily (6–17 years).

BRONCHITIS, BRONCHIOLITIS

Seek medical attention if your child is experiencing shortness of breath or labored breathing.

Steam Inhalation—Place a bowl of hot water with 1 drop each of copaiba and frankincense next to, but out of reach of, the infant (birth–12 months) up to 3 times daily. Place a bowl of hot water with 2 drops each of myrtle and copaiba, and 1 drop of frankincense next to, but out of reach of, the child (1–5 years) up to 3 times daily. Place a bowl of hot water with 2 drops each of eucalyptus, myrtle, copaiba, and thyme next to the child up to 3 times daily (6–17 years).

Topical—Create a mixture of 1 drop each of lemon and frankincense in 2 teaspoons of carrier oil and apply a small amount of this mixture to the chest and upper back, 3 to 5 times daily (birth–12 months).

Create a mixture of 1 drop each of myrtle, ginger, pine, and thyme in 1 teaspoon of carrier oil and apply a small amount of this mixture to the chest and upper back, 3 to 5 times daily (1–5 years).

Create a mixture of 1 to 2 drops each of eucalyptus, myrtle, peppermint, ginger, pine, and thyme in 1 teaspoon of carrier oil and apply a small amount of this mixture to the chest and upper back, 3 to 5 times daily (6–17 years).

Oral—Take 1 drop each of oregano, cinnamon, and lemon orally up to 3 times daily (6–11 years).

Take 1 drop each of oregano, melaleuca (tea tree), thyme, lemon, and cinnamon up to 3 times daily (12–17 years).

BRUISE

Topical—Mix together 1 drop of lavender in 2 teaspoons of carrier oil and apply enough of the mixture to cover the affected area and surrounding area, several times daily (birth–12 months).

Mix together 1 drop each of helichrysum, lavender, and frankincense in 1 teaspoon of carrier oil and apply enough of this mixture to the affected area and surrounding area, several times daily (1–5 years).

Mix together 1 drop each of helichrysum, lavender, and frankincense in equal parts of carrier oil and apply enough of this mixture to the affected area and surrounding area, several times daily (6–17).

Homeopathic Remedies—Arnica cream can be applied over the essential oils (not to be applied over broken skin).

BURNS

Other—First cool the area with cold water (not ice) for several minutes. If the burn covers a large area of the body, is on the hands, feet, face, or genitals, seek medical attention as soon as possible.

Topical—Mix together 1 drop of lavender in 2 teaspoons of aloe vera gel and apply to the affected area, several times daily, and keep the area covered with a cool, damp gauze pad (birth–12 months).

Apply 1 to 5 drops of lavender and/or German chamomile (enough to cover the area) neat (or with equal parts aloe vera) to the affected area, and then soak a gauze pad in half a pint of cold water with 5 drops of lavender, wring out, and apply to the affected area (1 to 17 years). Change the dressing every hour.

CANKER SORES

Topical—Mix together 1 drop of lavender, lemon, or melaleuca (tea tree) in 1 teaspoon of carrier oil and apply 1 drop of this mixture to the affected area, several times daily (1–5 years).

Mix together 1 drop of lavender, lemon, or melaleuca (tea tree) in half a teaspoon of carrier oil and apply 1 drop of this mixture to the affected area, several times daily (6–11 years). Apply 1 drop of lavender, lemon, or melaleuca (tea tree) neat to the affected area up to four times daily (12–17 years). Rotating the oils used will improve effectiveness.

CHICKEN POX

Aromatic Bath — Place 1 cup of raw oats in some muslin (or similar cloth) and add 3 drops each of

German chamomile, melaleuca (tea tree), and lavender to the oats. Tie the material off or place a rubber band around the top to close securely and run a bath with this mixture under the stream of water. Place the mixture inside the material in the bath and then add 1 drop of each oil in half a cup of baking soda to the bath. Allow the child to soak for several minutes (2–17 years). Use 1 drop of each oil in the oatmeal mixture for infants (birth and up to age 2).

Topical—Mix together 1 drop each of lavender and German chamomile in 3 teaspoons of carrier oil and apply small amounts of this mixture to the spots up to 3 times daily (birth–12 months). Mix together 2 drops each of German chamomile, melaleuca (tea tree), and lavender in 1 teaspoon of carrier oil and apply small amounts of this mixture to the spots, several times daily (1–5 years). Mix together 5 drops each of German chamomile, melaleuca (tea tree), and lavender in equal parts carrier oil and apply small amounts of this mixture to the spots, several times daily (6–17 years).

Oral—Take 1 drop each of lemongrass, oregano, and lemon orally, 3 times daily (6–11 years). Take 2 drops each of oregano and lemon, and 1 drop of lemongrass orally, 3 times daily (12–17 years).

Homeopathic Remedies—Give the child *Rhus tox 30C* 3 times daily, reducing the frequency of dose as symptoms improve.

CHILBLAINS

Topical—Mix together 1 drop each of lavender and German chamomile in 3 teaspoons of carrier oil and apply a small amount of this mixture to the affected area up to 3 times daily (birth–12 months).

Mix together 1 drop each of lavender, cypress, and German chamomile in 1 teaspoon of carrier oil and apply a small amount of this mixture to the affected area up to 3 times daily (1–5 years).

Mix together 1 drop each of lavender and German chamomile in half a teaspoon of carrier oil and apply a small amount of this mixture to the affected area up to 3 times daily (6–17 years).

CIRCUMCISION

Topical—Mix 1 drop each of lavender and German chamomile in half a pint of water and spray this mixture on the genital area, several times daily.

Homeopathic Remedies—Give the child *arnica* before and after the procedure.

COLDS (Common Cold)

Topical—Create a mixture of 10 drops each of melaleuca (tea tree) and lemon, and 5 drops of lavender. Add 1 drop of this mixture to 2 teaspoons of carrier oil and massage a small amount of this mixture into the chest and upper back every 30 minutes for the first 4 hours. Then apply every 2 hours until symptoms subside (birth–12 months). Create a mixture of 10 drops each of melaleuca (tea tree) and lemon, and 5 drops each of myrtle and thyme. Add 2 to 3 drops of this mixture to 1 teaspoon of carrier oil and massage a small amount of this mixture into the chest and upper back every 30 minutes for the first 4 hours. Then apply every 2 hours until symptoms subside (1–5 years). Create a mixture of 10 drops each of melaleuca (tea tree) and lemon, and 3 drops each of myrtle, eucalyptus, and thyme. Add 3 to 5 drops of this mixture to 1 teaspoon of carrier oil and massage a small amount of this mixture into the chest and upper back every 30 minutes for the first 4 hours. Then apply every 2 hours until symptoms subside (6–17 years).

Steam Inhalation—Add 2 to 10 drops of the above-mentioned mixtures (according to age) to 1 pint of hot water and place near the child (but where young children will not be able to touch it).

Aromatic Bath—Add 1 drop of the above mixture (according to age) to 1 teaspoon of carrier oil to a warm bath (birth–12 months). Add 1 to 4 drops of the above mixture in 1 teaspoon of carrier oil to a warm bath (1–5 years). Add 3 to 7 drops of the above mixture in 1 teaspoon of carrier oil to a warm

bath (6–17 years).

COLD SORES (Fever Blisters)

Topical—Mix together 1 drop of lavender, lemon, or melaleuca (tea tree) in 1 teaspoon of carrier oil and apply 1 drop of this mixture to the affected area, several times daily (1–5 years). Mix together 1 drop of lavender, lemon, or melaleuca (tea tree) in half a teaspoon of carrier oil and apply 1 drop of this mixture to the affected area, several times daily (6–11 years). Apply 1 drop of lavender, lemon, or melaleuca (tea tree) neat to the affected area up to four times daily (12–17 years). Rotating the oils used will improve effectiveness.

COLIC

There are many underlying reasons a child experiences colic. It is strongly recommended to check for medical causes of irritability such as food sensitivities, acid reflux, etc.

Topical—Mix together 1 drop of German chamomile and lavender in 3 teaspoons of carrier oil and apply to the infant's abdomen up to 3 times daily (birth–12 months).

Aromatic Bath—Give the infant a bath by adding 1 drop of lavender in 1 teaspoon of carrier oil to the bath water.

Inhalation—Apply 1 drop each of lavender and cedarwood to your body for the infant to inhale.

Homeopathic Remedies—Give the child pulsatilla 30C (if the colic occurs after feeding or in the evening), chamomilla 30C (if accompanying teething or the abdomen is very sensitive to touch), or belladonna (when the baby is very restless and arches backwards).

CONCUSSION

Seek medical attention as soon as possible if the person lost consciousness, experiences weakness, involuntary movements, or changes in personality as a result of the concussion.

Topical—Apply 1 drop each of frankincense, vetiver, and sandalwood with 9 drops of carrier oil to the head and back of the neck, 1 to 3 times daily (2–5 years). Apply 1 to 2 drops each of frankincense, vetiver, and sandalwood with equal drops of carrier oil to the head and back of the neck, 1 to 3 times daily (6–17 years).

Oral—Take 1 drop each of frankincense, vetiver, and sandalwood orally, 1 to 3 times daily (6–11 years). Take 1 drop each of frankincense, vetiver (turmeric is also a good option and may be added if available), and sandalwood orally, 2 to 3 times daily (12–17 years).

Homeopathic—Give the child natrum sulphuricum 30C.

CONGESTION (SINUS)

Seek medical attention if your child experiences mucous drainage from the eyes, redness around the eyes, or fever, which may indicate a sinus infection.

Topical—Mix together 1 drop each of lemon and lavender in 3 teaspoons of carrier oil and massage a small amount of this to the chest and upper back, several times daily (birth–12 months). Mix together 1 drop each of myrtle, pine, and thyme in 1 teaspoon of carrier oil and apply a small amount of this to the chest and upper back, several times daily (1–5 years). Mix together 2 to 3 drops of eucalyptus and 1 to 2 drops each of myrtle, peppermint, and thyme in 1 teaspoon of carrier oil and apply to the chest and upper back, several times daily (6–17 years).

Steam Inhalation—Add 1 drop each of lemon, frankincense, and bergamot to 1 pint of hot water and

place near, but out of reach of the infant, up to 3 times daily (birth–12 months). Add 1 to 2 drops each of myrtle, pine, and thyme to 1 pint of hot water and place near, but out of reach of the child, up to 3 times daily (1–5 years). Add 1 to 3 drops each of myrtle, eucalyptus, and peppermint to 1 pint of hot water and place near the child up to 3 times daily (6–17 years).

CONJUNCTIVITIS (Pink Eye)

Seek medical attention if fever and pain around the eye occurs, or if pain increases with movement of the eye.

Topical—Mix together 1/8 teaspoon of raw, organic honey with 2 tablespoons of distilled warm water until dissolved. Place 1 to 3 drops of the mixture in both eyes with a clean eye dropper 2 to 4 times daily until infection clears. Mix together 1 drop each of lavender, frankincense, and melaleuca (tea tree) in 1 to 2 teaspoons of carrier oil and apply this mixture widely around both eyes (6–17 years) up to 3 times daily.

CONSTIPATION

Topical—Mix together 1 drop each of lemon and grapefruit in 3 teaspoons of carrier oil and massage a small amount of this mixture to the abdomen in a clockwise direction up to 3 times daily (birth–12 months). Mix together 1 drop each of lemon, ginger, and grapefruit in 1 teaspoon of carrier oil and massage a small amount of this mixture to the abdomen in a clockwise direction up to 3 times daily (1–5 years). Mix together 1 to 2 drops each of lemon, ginger, and grapefruit in 1 teaspoon of carrier oil and massage a small amount of this mixture to the abdomen in a clockwise direction up to 3 times daily (6–17 years).

Oral—Take 1 drop each of lemon and ginger orally up to 3 times daily (6–11 years). Take 1 to 2 drops each of ginger, lemon, and grapefruit orally up to 3 times daily (12–17 years).

Other—Have the child lie on her back and pump her knees toward the chest (as if riding a bicycle) several times.

COUGH

Children under 1 with a cough should be seen by a physician. Seek medical attention for a cough with chest pain, shortness of breath, labored breathing, or fever that lasts more than 3 days.

Topical—Mix together 1 drop each of melaleuca (tea tree) and lavender in 3 teaspoons of carrier oil and apply a small amount of this mixture to the chest and upper back, several times daily (birth–12 months). Mix together 1 drop each of sandalwood, myrtle, pine, and cypress in half a teaspoon of carrier oil and apply a small amount of this mixture to the chest and upper back, several times daily (1–5 years). Apply 1 drop of oregano, thyme, and clove in 10 to 15 drops of carrier oil to the bottoms of the feet up to 3 times daily (1 to 5 years). Mix together 1 to 3 drops each of eucalyptus, myrtle, basil, and peppermint in half a teaspoon of carrier oil and apply a small amount of this mixture to the chest and upper back, several times daily (6–17 years). Apply 1 drop of one of the above oils (within the appropriate age range) to chest area of the child's pajamas before going to bed.

Steam Inhalation—Add 1 drop each of melaleuca (tea tree) and lavender to 1 pint of hot water and place near, but out of reach of the infant, up to 3 times daily (birth–12 months). Add 1 to 2 drops each of sandalwood, myrtle, pine, and cypress to 1 pint of hot water and place near, but out of reach of the child, up to 3 times daily (1–5 years). Add 1 to 3 drops each of myrtle, eucalyptus, basil, and peppermint to 1 pint of hot water and place near the child up to 3 times daily (6–17 years).

Oral—Take 1 to 2 drops each of oregano, cinnamon, myrrh, and lemon orally up to 3 times daily (6–17 years). Create a cough syrup by adding 5 drops of lemon, and 3 drops each of German chamomile and melaleuca (tea tree) to 1 cup of pure maple syrup and give 1 teaspoon of this mixture up to 3 times daily (6–17 years).

CRADLE CAP

(Infantile Seborrheic Dermatitis)

Topical—Massage 1 drop each of lemon, melaleuca (tea tree), lavender, and geranium in 1 tablespoon of carrier oil to the scalp. Leave in place for up to 15 minutes and then rinse with warm water and a mild soap. Do this once daily, being sure to keep mixture away from baby's eyes and face.

CROUP

Seek medical attention if your child experiences stridor (a harsh, raspy, whooping sound when breathing in) during periods of calm or rest.

Follow the directions for cough, but cover each essential oil application with a warm, damp towel.

Homeopathic Remedies—Give the child aconitum 30C (for croupy coughs that are worse at night and wake the child), spongia 30C (if aconitum is ineffective), or hepar sulphur 30C (for croupy coughs that are worse when exposed to cold).

CRYPTOSPORIDIOSIS

Topical—Mix together 1 to 2 drops each of German chamomile, lavender, and sandalwood in half a teaspoon of carrier oil, and apply a small amount of the mixture to the lower abdomen up to 6 times daily (1–5 years). Mix together 1 to 2 drops each of lemongrass, clove, oregano, myrtle, and German chamomile in half a teaspoon of carrier oil, and apply to the lower abdomen up to 6 times daily.

Oral—Take 1 drop each of clove, oregano, and lemongrass orally up to 3 times daily (6–11 years). Take 1 drop each of clove, lemongrass, oregano, and German chamomile orally up to 3 times daily (12–17 years).

CUTS (Minor)

Other—Thoroughly wash/cleanse the area and remove any debris or dirt 2 to 3 times daily.

Topical—Place 1 drop each of lavender and melaleuca (tea tree) on a gauze pad and cover the cut (birth–12 months). Place 1 to 2 drops each of lavender and melaleuca (tea tree) on a gauze pad and cover the cut (1–5 years). Place 1 to 3 drops of lavender, melaleuca (tea tree), and eucalyptus on a gauze pad and cover the wound with this (6–17 years). Replace all pads, 2 to 4 times daily. Allow the area to breathe for several minutes between each gauze pad change. Alternately, place 1 single drop of chosen oil on a bandage before covering. Apply 1 drop of melaleuca (tea tree) in half a teaspoon of carrier oil around the wound up to 3 times daily (birth–5). Apply 1 drop of melaleuca (tea tree) and eucalyptus in equal parts of carrier oil around the wound up to 3 times daily (6–17 years).

DEPRESSION

Children with depression should be under the care of a licensed professional. Seek medical attention immediately if your child experiences suicidal thoughts.

Topical—Apply 1 to 4 drops of orange oil to the bottoms of the feet, 3 times daily (2–17 years).

Apply 1 drop each of ylang ylang, bergamot, and frankincense in equal parts of carrier oil to the heart area of the chest up to 3 times daily (2–17 years).

Oral—Take 2 drops of lemon and 1 drop of bergamot or neroli orally up to 3 times daily (6–11 years). Take 2 drops of lemon and orange, and 1 drop of bergamot or neroli orally up to 3 times daily (12–17 years).

DIAPER RASH

Topical—Mix together 1 drop each of lavender, German chamomile, and melaleuca (tea tree) in 1 teaspoon of carrier oil and apply at each diaper change.

DIARRHEA

A physician can determine if the diarrhea is infectious or non-infectious related.

Topical—Mix together 1 drop each of German chamomile, lavender, and melaleuca (tea tree) in 2 teaspoons of carrier oil and massage a small amount of this mixture over the entire abdomen up to 3 times daily (birth–12 months). Mix together 1 drop each of German chamomile, lavender, and melaleuca (tea tree) in 1 teaspoon of carrier oil and massage a small amount of this mixture over the entire abdomen up to 3 times daily (1–5 years). Mix together 1 drop each of peppermint, fennel, and basil in half a teaspoon of carrier oil and massage a small amount of this mixture over the entire abdomen up to 3 times daily (6–17 years).

Oral—Take 1 to 3 drops of peppermint orally up to 3 times daily (6–17 years).

EAR INFECTION

(Earache, Otitis Media)

Seek medical attention if your child experiences drainage from the ear or tenderness of the skull.

Topical—Mix together 1 drop each of lavender and melaleuca (tea tree) in 1 to 2 teaspoons of carrier oil and apply a small amount of this mixture around the ear, then place 1 drop of this mixture on a cotton ball, and place the cotton ball in the ear. Replace the cotton ball every 30 minutes until symptoms are relieved (birth–12 months). Mix together 1 drop each of lavender, basil, thyme, and melaleuca (tea tree) in 1 teaspoon of carrier oil and apply a small amount of this mixture around the ear, then place 1 drop of this mixture on a cotton ball, and place the cotton ball in the ear—replace the cotton ball every 30 minutes until symptoms are relieved (1–17 years). In addition, apply 1 drop each of cinnamon, oregano, clove, and lemon in equal parts carrier oil to the bottoms of the feet every 2 to 4 hours (1–17 years).

Oral—Take 1 drop each of oregano, cinnamon, melaleuca (tea tree), and lemon orally up to 3 times daily (6–17 years).

Homeopathic Remedies—Give pulsatilla 30C (if child is more clingy than usual), chamomilla 30C (if the child is very irritable), or hepar sulphur 30C (if severe pain is the major complaint). For chronic ear infections, give the child mercurius.

ECZEMA

Homeopathic Remedies—Homeopathic cardiospermum should be the first remedy used for eczema. If this does not provide relief, the next option is homeopathic calendula. Essential oils (and some carrier oils) may make the condition worse if not heavily diluted.

Topical—Mix together 1 drop each of lavender, melaleuca (tea tree), German chamomile, and frankincense in 2 tablespoons of sweet almond oil and apply a small amount of this mixture up to 6

times daily.

EPILEPSY (Seizures)

Other—Please review the list of essential oils and carrier oils that may trigger seizures. Always try new essential oils with a companion that can offer help as certain essential oil aromas can trigger an epileptic reaction in those with epilepsy, even those not listed as triggers.

Topical—Mix together 1 drop each of ylang ylang, Roman chamomile, lavender, and lemongrass in 1 teaspoon of carrier oil and apply a small amount of this mixture to the back of the neck, 2 times daily (6–17 years). Use the same oil in 2 teaspoons of carrier oil for ages 1 to 5.

Oral—Take 3 drops of rose oil orally, 3 times daily (6–11 years). Take 5 to 7 drops of rose oil orally, 3 times daily (6–17 years).

FEVER

Fevers can be beneficial by making the body's internal environment less hospitable for harmful organisms. However, it may also be necessary to calm the fever. The American Academy of Pediatrics recommends that you contact your child's doctor when fever temperatures reach the following: under 3 months—any fever of 100.4°F or higher, 3 to 6 months—any fever of 101°F or higher, over 6 months—any fever of 103°F or higher.

Topical—Mix together 1 pint of lukewarm water, 1 tablespoon of apple cider vinegar, 3 drops of lavender, and 1 drop of lemon. Dip a clean cloth in this mixture and gently wring out before applying to the forehead and spine (birth–5 years). Avoid the eyes and ears. Mix together 1 pint of lukewarm water, 1 tablespoon of apple cider vinegar, 3 drops of peppermint, and 1 drop each of eucalyptus and lavender. Dip a clean cloth in this mixture and gently wring out before applying to the forehead and spine (6–17 years).

FIFTH DISEASE

Aromatic Bath —Place 1 cup of raw oats in some muslin (or similar cloth) and add 3 drops each of German chamomile, melaleuca (tea tree), and lavender to the oats. Tie the material off or place a rubber band around the top to close securely and run a bath with this mixture under the stream of water. Place the mixture inside the material in the bath and then add 1 drop of each oil in half a cup of baking soda to the bath. Allow the child to soak for several minutes (2–17 years). Use 1 drop of each oil in the oatmeal mixture for infants (birth and up to age 2).

Topical—Mix together 1 drop each of thyme, melaleuca (tea tree), lavender, and geranium in 3 teaspoons of carrier oil and apply a small amount of the mixture to the affected area (stay clear of the eyes and mouth) up to 3 times daily (1–17 years).

Oral—Take 1 to 2 drops each of lemon, oregano, cinnamon, and melaleuca (tea tree) orally, 1 to 3 times daily (6–17 years).

FLU (Influenza)

Seek medical attention if any issues with breathing occur, or if symptoms improve and then return again.

Topical—Create a mixture of 10 drops each of melaleuca (tea tree) and lemon, and 5 drops of lavender. Add 1 drop of this mixture to 2 teaspoons of carrier oil and massage a small amount of this mixture into the chest and upper back every 30 minutes for the first 4 hours. Then apply every 2 hours until symptoms subside (birth–12 months). Mix together 1 drop each of myrtle, melaleuca (tea tree),

and thyme in 1 teaspoon of carrier oil and apply a small amount of this mixture to the chest and upper back, 3 to 6 times daily (1–5 years).

Mix together 1 to 3 drops each of myrtle, eucalyptus, melaleuca (tea tree), lemongrass, and thyme in 1 teaspoon of carrier oil and apply a small amount of this mixture to the chest and upper back, 3 to 6 times daily (6–17 years). Apply 1 drop each of cinnamon, clove, and oregano to the bottoms of the feet in 10 drops of carrier oil every 3 hours (1–17 years).

Oral—Take 1 drop each of melaleuca (tea tree), lemongrass, and cinnamon orally, 3 times daily (6–11 years). Take 1 to 2 drops each of melaleuca (tea tree), cinnamon, oregano, and lemongrass orally, 3 times daily (12–17 years).

Homeopathic Remedies—Take *oscillo-coccinum* 200C at the first signs of flu. *Gelsemium* 30C every 1 to 2 hours until symptoms subside is also a good option.

FOOD POISONING

Seek medical attention if your child experiences blood in the stool.

Topical—Mix together 1 drop each of lemon and German chamomile in half a teaspoon of carrier oil and apply enough of this mixture to cover the abdomen every 2 hours until symptoms subside (1 to 5 years). Mix together 1 to 2 drops each of peppermint, ginger, and lemongrass in half a teaspoon of carrier oil and apply enough of this mixture to cover the abdomen every 1 to 2 hours until symptoms subside (6–17 years).

Oral—Take 1 drop each of peppermint, lemongrass, and juniper orally up to 3 times daily (6–17 years).

FROSTBITE

Seek medical attention especially if your child's skin will not warm, remains numb, blisters, or swells.

Topical—Mix together 1 pint of warm water and 1 to 3 drops each of thyme, cypress, ginger, and geranium, and dip a clean cloth in the water. Wring out, apply to the frostbitten area, and then cover with plastic wrap and a hot water bottle for up to 3 hours (1–17 years). Massage the area with 1 drop each of thyme, ginger, and cypress in equal parts carrier oil up to five times daily. Seek medical attention as soon as possible.

G6PD DEFICIENCY (Glucose-6-Phosphate Dehydrogenase)

Topical—Mix together 1 drop each of lemon and frankincense in 2 teaspoons of carrier oil and apply this mixture to the spine and lower back up to 3 times daily (birth–12 months). Mix together 1 to 2 drops each of lemon, ginger, clove, helichrysum, and cypress in 1 teaspoon of carrier oil and apply this mixture to the spine and lower back up to 3 times daily (1–17 years).

Other—Avoid the use of essential oils with high menthol and camphor content.

GASTROESOPHAGEAL REFLUX DISEASE (GERD, Acid Reflux)

It is strongly recommended that a comprehensive analysis be performed including nutrition, allergies, and digestion to determine the root cause of GERD.

Oral—Take 1 drop each of lemon, orange, and ginger orally up to 3 times daily (6–11 years). Take 2 drops each of lemon, orange, and ginger orally up to 3 times daily (12–17 years).

Topical—Mix together 1 drop each of lemon and chamomile in 1 teaspoon of carrier oil and apply a

small amount of this mixture to the abdomen and chest up to 3 times daily (birth–12 months). Mix together 1 drop each of lemon, orange, and ginger in half a teaspoon of carrier oil and apply a small amount of this mixture to the abdomen and chest up to 3 times daily (1–5 years).

Other—Consider hiatal massage for children birth to 5 years.

GIARDIA

Seek medical attention if the child experiences malnutrition, weight loss, or dehydration from giardia.

Topical—Mix together 1 drop each of clove, basil, and thyme in 1 teaspoon of carrier oil and apply a small amount of this mixture to the abdomen up to 6 times daily (1–5 years). Mix together 1 to 2 drops of clove, basil, and thyme in half a teaspoon of carrier oil and apply a small amount of this mixture to the abdomen up to 6 times daily (6–17 years).

Oral—Take 1 drop each of clove, thyme, and basil orally, 1 to 3 times daily (6–11 years). Take 2 drops of clove and thyme, and 1 drop of basil orally, 1 to 3 times daily (12–17 years).

GROWING PAINS

Topical—Mix together 1 drop each of balsam fir, frankincense, lavender, German chamomile, and ginger in 1 teaspoon of carrier oil and apply some of this mixture to the painful areas up to 6 times daily (1–5 years). Mix together 1 to 2 drops each of balsam fir, lemongrass, marjoram, ginger, and eucalyptus in 1 teaspoon of carrier oil and apply to the painful areas up to 6 times daily (6–17 years).

Aromatic Bath—Mix together 1 drop each of lavender, balsam fir, German chamomile, and ginger to half a cup of Epsom salts (use coarse sea salt for diabetics) and add this to a warm bath (1–5 years).

Mix together 1 to 2 drops each of balsam fir, marjoram, lemongrass, basil, and ginger to half a cup of Epsom salts (use coarse sea salt for diabetics) and add this to a warm bath (1–5 years).

Other—Apply heat to the area.

Homeopathic Remedies—Give the child *calcarea phos* 6X.

HAND, FOOT, & MOUTH DISEASE

Topical—Mix together 1 drop each of melaleuca (tea tree), lemon, and lavender in 2 teaspoons of carrier oil and apply this mixture to any skin blisters, 2 to 4 times daily (birth–12 months). Mix together 1 drop each of melaleuca (tea tree), lemon, lavender, and thyme in 1 teaspoon of aloe vera oil and apply this mixture to any skin blisters, 2 to 4 times daily (1–6 years). Mix together 2 to 3 drops each of melaleuca (tea tree), lemon, lavender, and thyme in 1 teaspoon of aloe vera oil and apply this mixture to any skin blisters and mouth sores, 2 to 4 times daily (7–17 years). Apply 1 to 2 drops of cinnamon, thyme, and oregano in 12 drops of carrier oil to the feet up to 3 times daily (1–17 years). See fever section for fevers.

HAY FEVER

Experiment with the different formulas to determine which one provides the greatest relief for your child.

Inhalation—Place 1 drop each of lavender, German chamomile, and lemon on a tissue and have the child inhale as necessary (1–17 years). Children 6 or over can use the above formula or place 1 drop each of eucalyptus, peppermint, and lavender in a tissue and inhale as necessary (6–17 years).

Oral—Take 2 drops each of lavender and German chamomile orally up to 3 times daily (6–11). Take 2 drops each of lavender, lemon, and German chamomile orally up to 3 times daily (12–17 years).

Alternately, take 1 to 2 drops each of lavender, lemon, and peppermint orally up to 3 times daily (6–17 years).

Homeopathic Remedies—Give the child sulphur 6C (if most affected in the summer or symptoms are aggravated by heat) or ambrosia 6C (for ragweed allergies).

HEAD LICE

Topical—Mix together 10 drops each of melaleuca (tea tree) and lavender, and 5 drops each of myrtle and thyme, and then add 5 drops of this mixture to 1 tablespoon of carrier oil and massage into scalp. Cover the head with a shower cap and let sit for 30 minutes before rinsing the hair with 16 ounces of warm water and 20 drops of the above mixture (1–5 years). For older children follow the same procedure with the following modifications: use 10 drops of the mixture during the scalp massage, and substitute eucalyptus for myrtle (6–17 years).

HEADACHE

Seek medical attention for excruciating headaches accompanied by disorientation or neck stiffness to assess neurological explanations.

Topical—Mix together 5 drops each of lavender, German chamomile, and basil, and then mix 1 to 2 drops of this mixture with 20 drops of carrier oil and apply to the temples, forehead, and back of the neck up to 3 times daily (1–5 years). Mix together 5 drops each of lavender, peppermint, and basil, and then mix 1 to 2 drops of this mixture with 10 drops of carrier oil and apply to the temples, forehead, and back of the neck up to 3 times daily (6–11 years). Mix together 5 drops each of lavender, peppermint, and basil, and then mix 1 to 2 drops of this mixture with 5 drops of carrier oil and apply to the temples, forehead, and back of the neck up to 3 times daily (12–17 years).

Oral—Place 1 drop of peppermint on your thumb with 2 drops of carrier oil and push this mixture to the roof of your mouth (12–17 years) up to 3 times daily.

Homeopathic Remedies—Give the child kali bichromicum 6C (for headache with nausea or above the eyes), gelsemium 6C (for headache at the back of the head), or bryonia 6C (for headaches that are worse from the slightest motion).

HEAT EXHAUSTION

Seek medical attention if your child experiences nausea, vomiting, headache, dizziness, fatigue, rapid heartbeat, hot and dry skin, shortness of breath, or decreased urination.

Topical—Mix together 1 drop each of lavender and lemon in equal parts carrier oil and apply to the back of the neck, temples, shoulders, and tips of the ears; then soak a cloth in half a cup of cool water and 2 drops each of lavender and lemon and place this over the back of the child's neck (1–5 years). Mix together 2 drops each of lavender and peppermint in equal parts carrier oil and apply to the back of the neck, temples, shoulders, and tips of the ears; then soak a cloth in half a cup of cool water and 3 to 4 drops each of lavender and peppermint and place this over the back of the child's neck (6–17 years).

Homeopathic Remedies—Give the child belladonna 30C.

HEMORRHOIDS

Topical—Mix together 1 drop each of lavender, cypress, and melaleuca (tea tree) in 5 to 10 drops of carrier oil and apply a drop of this mixture to the painful area, several times daily (1–17 years).

HIVES (Urticaria)

Seek medical attention if breathing issues, constricted airways, profuse diarrhea, vomiting, fainting, or dizziness occurs with the hives.

Homeopathic Remedies—Apply calendula to the affected area as indicated on the product label.

Topical —Mix together 2 to 4 drops each of German chamomile and lavender in 1 to 2 teaspoons of carrier oil to the affected area up to 3 times daily (1–17 years). Test on a small area first because essential oils may aggravate hives.

Oral—Take 2 drops of German chamomile and 1 drop of lavender orally, 1 to 3 times daily (6–11 years). Take 2 drops each of German chamomile and lavender, and 1 drop of frankincense orally, 1 to 3 times daily (12–17 years).

Homeopathic Remedies—Give the child apis 30C (for hives that are worse with any heat), pulsatilla 6C (for hives following eating rich or greasy foods, or after emotional trauma), or urtica urens 6C (for hives that burn).

IMPETIGO

Seek medical attention if the area is painful, the redness is spreading, or fever is experienced.

Topical—Mix together 1 drop each of lavender, German chamomile, and melaleuca (tea tree) in 3 teaspoons of carrier oil and apply very small amounts of this mixture to the affected areas up to 3 times daily (birth–12 months). Mix together 1 drop each of lavender, melaleuca (tea tree), thyme, and German chamomile in 1 teaspoon of carrier oil and apply very small amounts of this mixture to the affected areas up to 3 times daily (1–5 years). Mix together 2 drops each of lavender, melaleuca (tea tree), thyme, and lemongrass in 1 teaspoon of carrier oil and apply very small amounts of this mixture to the affected areas up to 3 times daily (6–17 years).

Oral—Take 1 drop each of cinnamon, lemongrass, and peppermint orally up to 3 times daily (6–11 years). Take 1 drop each of cinnamon, lemongrass, melaleuca (tea tree), and peppermint orally up to 3 times daily (12–17 years).

Homeopathic Remedies—Give the child antimonium crudum 6C.

INDIGESTION

Topical—Mix together 1 drop each of lavender and German chamomile in 2 teaspoons of carrier oil and apply a small amount of this mixture to the abdomen in a clockwise circular motion up to 3 times daily (birth–12 months). Mix together 1 drop each of ginger and basil in 1 teaspoon of carrier oil and apply a small amount of this mixture to the abdomen in a clockwise circular motion up to 3 times daily (1–5 years). Mix together 1 drop each of ginger, peppermint, fennel, and basil in half a teaspoon of carrier oil and apply a small amount of this mixture to the abdomen in a clockwise circular motion up to 3 times daily (6–17 years).

Oral—Take 1 drop each of peppermint and ginger orally up to 3 times daily (6–11 years). Take 2 drops of peppermint, and 1 drop each of ginger and fennel orally up to 3 times daily (12–17 years).

Homeopathic Remedies—Give the child bryonia 30C (if indigestion occurs after eating rich or fatty foods), or nux vomica 30C (if from overindulging or long-term stress).

INSOMNIA

Inhalation—Place 1 drop of lavender on the crib or bed sheet away from the infant's head before bedtime (birth–12 months). Place 1 drop each of cedarwood and lavender on the pillow away from the child's face, or the upper part of the pajamas before going to bed (1–17 years).

Topical—Massage 1 drop of lavender with 5 drops of carrier oil to the soles of the feet before bedtime (birth–12 months). Massage 1 drop each of cedarwood and lavender in equal parts of carrier oil to the soles of the feet before retiring to bed (1–17 years).

Homeopathic Remedies—Give the child *coffea 6C* (if mentally hyperactive), *rhus tox 30C* (if restless), or *kali phosphoricum 6C* (if night terrors interrupt sleep).

JAUNDICE (Infant)

Only use in conjunction with Western treatment options. Severe jaundice could result in brain damage, breathing problems, and seizures.

Topical—Mix together 1 drop each of geranium, lemon, and helichrysum in 2 tablespoons of carrier oil and apply a small amount of this mixture on the upper right part of the abdomen (over the liver) and to the bottoms of the feet up to 3 times daily.

LARYNGITIS

Topical—Mix together 1 drop each of thyme and melaleuca (tea tree) in 1 teaspoon of carrier oil and apply to the upper chest and over the throat up to 4 times daily (1–5 years). Mix together 1 drop each of thyme, eucalyptus, and melaleuca (tea tree) in 1 teaspoon of carrier oil and apply to the upper chest and over the throat up to 4 times daily (6–17 years).

Oral—Gargle with a mixture of 1 drop each of lemon, German chamomile, and vetiver with 1 teaspoon of honey in 4 ounces of water and spit out up to 3 times daily (2–5 years). Gargle with 1 drop each of lemon, eucalyptus, and vetiver with 1 teaspoon of honey in 4 ounces of water and swallow up to 3 times daily (6–17 years).

MALARIA

Life-threatening complications can develop with malaria. Only use this protocol in conjunction with Western medical options and with approval from a physician. Seek medical attention immediately for symptoms such as severe fatigue or shortness of breath.

Topical—Mix together 1 drop each of lemon, sandalwood, and myrtle in 1 teaspoon of carrier oil and apply a small amount of this mixture to the spine up to 5 times daily (birth–12 months). Mix together 1 drop each of lemongrass, myrtle, sandalwood, melaleuca (tea tree), and lemon in 10 drops of carrier oil and apply this mixture to the spine and bottoms of the feet up to 5 times daily (1–5 years). Mix together 1 drop each of lemongrass, myrtle, sandalwood, rosemary, and oregano in 10 drops of carrier oil and apply to the spine and bottoms of the feet up to 5 times daily (6–17 years).

Oral—Take 1 drop each of rosemary, thyme, melaleuca (tea tree), and oregano orally up to 3 times daily (6–11 years). Take 2 drops each of rosemary and oregano, and 1 drop each of thyme and melaleuca (tea tree) up to 3 times daily (12–17 years).

MEASLES

Only use in conjunction with Western medical options and with approval from a physician.

Aromatic Bath —Place 1 cup of raw oats in some muslin (or similar cloth) and add 3 drops each of German chamomile, melaleuca (tea tree), and lavender to the oats. Tie the material off or place a rubber band around the top to close securely and run a bath with this mixture under the stream of water. Place the mixture inside the material in the bath and then add 1 drop of each oil in half a cup of baking soda to the bath. Allow the child to soak for several minutes (2–17). Use 1 drop of each oil in

the oatmeal mixture for infants (birth and up to age 2).

Topical—Mix together 1 drop each of melaleuca (tea tree), lavender, and German chamomile in 4 teaspoons of carrier oil and dab a small amount of this mixture to the affected area with a cotton ball, several times daily (birth–12 months). Mix together 1 drop each of melaleuca (tea tree), lavender, and German chamomile in 1 teaspoon of carrier oil and dab a small amount of this mixture to the affected area with a cotton ball, several times daily (1–5 years). Mix together 1 drop each of melaleuca (tea tree), lavender, and German chamomile in half a teaspoon of carrier oil and dab a small amount of this mixture to the affected area with a cotton ball, several times daily (birth–12 months).

Oral—Take 1 drop each of oregano, lavender, German chamomile, and melaleuca (tea tree) orally, 2 to 3 times daily (6–11 years). Take 2 drops of oregano, and 1 drop each of lavender, German chamomile, and melaleuca (tea tree) orally, 2 to 3 times daily (12–17 years).

Homeopathic Remedies—Give the child belladonna 30C or aconitum 30C every 2 hours during the beginning stages of the measles. For mild cases, give pulsatilla 30C.

MENINGITIS, VIRAL

Only use in conjunction with Western medical options and with approval from a physician.

Topical—Mix together 1 drop each of melaleuca (tea tree), German chamomile, bergamot, thyme, and lemon in 2 tablespoons of carrier oil and apply a small amount of this mixture to the spine and behind and below the ears up to 3 times daily (birth–12 months). Mix together 1 drop each of thyme, cinnamon, lemongrass, melaleuca (tea tree), and bergamot in 1 teaspoon of carrier oil and apply a small amount of this mixture to the spine and behind and below the ears up to 3 times daily (1–5 years). Mix together 2 drops each of thyme, cinnamon, lemongrass, melaleuca (tea tree), eucalyptus, and bergamot in 1 teaspoon of carrier oil and apply a small amount of this mixture to the spine and behind and below the ears up to 3 times daily (6–17 years).

Oral—Take 1 drop each of oregano, cinnamon, clove, melaleuca (tea tree), and peppermint orally, 3 times daily (6–11 years). Take 1 drop each of oregano, cinnamon, clove, melaleuca (tea tree), eucalyptus, and peppermint orally, 3 times daily (12–17 years).

MENSTRUAL PAIN, PREMENSTRUAL SYNDROME (PMS)

Topical—Massage the lower abdomen with 1 drop each of clary sage, geranium, lavender, and marjoram in 5 drops of carrier oil up to 3 times daily (8–17 years).

Aromatic Bath—Take a warm bath with 2 drops each of bergamot, clary sage, and lavender in half a teaspoon of carrier oil (8–17 years).

Inhalation—Place 1 drop each of lavender, clary sage, and geranium on a tissue and inhale from this as necessary (8–17 years).

MIGRAINE

Topical—Mix together 1 drop each of peppermint, basil, and lavender in 1 teaspoon of carrier oil and apply a small amount of this mixture to the temples, forehead, back of the neck, and behind the ears every 30 minutes until symptoms subside (1–5 years). Mix together 1 drop each of peppermint, basil, and lavender in half a teaspoon of carrier oil and apply a small amount of this mixture to the temples, forehead, back of the neck, and behind the ears every 30 minutes until symptoms subside (6–17 years).

Oral—Place 1 drop of peppermint on your thumb with 2 drops of carrier oil and push this mixture to the roof of your mouth (12–17 years) up to 3 times daily.

Homeopathic Remedies—Give the child bryonia 6C (for migraine aggravated by slightest motion) or belladonna 6C (for a migraine that makes the head feel like it will burst).

Other—Children 6 and older can consider a feverfew herb supplement (not essential oil) daily as a preventive.

MONONUCLEOSIS

Caution must be exercised with contact sports if the child has an enlarged spleen.

Topical—Mix together 1 drop each of eucalyptus and frankincense in half a teaspoon of carrier oil and apply to the front of the neck, upper chest, and back (1–5 years). Mix together 2 drops each of eucalyptus and frankincense in half a teaspoon of carrier oil and apply to the front of the neck, upper chest, and back (6–17 years). In addition, mix together 1 drop each of oregano, thyme, basil, cypress, marjoram, and peppermint in 1.5 teaspoons of carrier oil and apply this mixture to the back (1–5 years). In addition, mix together 1 drop each of oregano, thyme, basil, cypress, marjoram, and peppermint in 1 teaspoon of carrier oil and apply this mixture to the back (6–17 years).

Oral—Take 1 drop each of thyme, oregano, lemon, and cinnamon orally, 1 to 3 times daily (6–11 years). Take 1 drop each of thyme, oregano, lemon, and cinnamon orally, 3 times daily (12–17 years).

MOTION SICKNESS

Topical—Mix together 1 drop each of peppermint, ginger, spearmint, fennel, and lemon in half a teaspoon of carrier oil and apply a small amount of this mixture to the wrists and insides of the ankles (6–17 years). This mixture can also be inhaled from a tissue.

Inhalation—Place 1 drop each of lemon and ginger on a tissue and inhale as necessary (1–5 years).

Oral—Take a capsule with 2 drops of peppermint and 1 drop each of ginger and spearmint orally 30 minutes before travel begins and every 4 hours thereafter (6–17 years).

Homeopathic Remedies—Give the child cocculus 6C.

Other—Make sure the child keeps his/her feet on the ground and eyes open.

MUMPS

Only use in conjunction with Western medical options. Life threatening complications such as encephalitis (inflammation of the brain), pancreatitis (inflammation of the pancreas), and meningitis may occur with mumps. In addition, swelling of the testicles and ovaries may occur.

Topical—Mix together 10 drops each of melaleuca (tea tree) and thyme, and 5 drops of lavender and German chamomile, and then mix 2 drops of this mixture with 1 teaspoon of carrier oil and apply to the neck and behind the ears up to 4 times daily (1–5 years). Use the same formula with 3 to 5 drops in half a teaspoon of carrier oil for older children (6–17 years).

Oral—Take 1 drop each of lemon, lavender, and cypress orally, 2 times daily (6–11 years). Take 1 drop each of lemon, lavender, eucalyptus, and cypress, 2 times daily (12–17 years).

Homeopathic Remedies—Give the child pilocarpinum 30C or belladonna 30C.

MUSCLE SORENESS

Topical—Mix together 1 drop each of basil, lavender, ginger, and German chamomile in 1 teaspoon of carrier oil and apply enough of the mixture to cover the sore muscle (1–5 years). Mix together 1 drop each of basil, lavender, marjoram, ginger, and peppermint in half a teaspoon of carrier oil and apply enough of the mixture to cover the sore muscle (6–17 years).

Homeopathic Remedies—Apply arnica cream to the sore muscles. 30C pellets can be taken orally as

well.

NAUSEA

Seek medical attention if nausea is accompanied by high fever, stiff neck, blurred vision, or a severe headache.

Topical—Mix together 1 drop each of peppermint, ginger, spearmint, fennel, and lemon in half a teaspoon of carrier oil and apply a small amount of this mixture to the wrists and insides of the ankles (6–17 years). This mixture can also be inhaled from a tissue.

Inhalation—Place 1 drop each of lemon and ginger on a tissue and inhale as necessary (1–5 years).

Oral—Take a capsule with 2 drops of peppermint and 1 drop each of ginger and spearmint orally 30 minutes before travel begins and every 4 hours thereafter (6–17 years).

Homeopathic Remedies—Give the child nux vomica 6C (especially if accompanied by drowsiness and irritability) or antimonium crudum 30C (if associated with overeating or eating rich foods).

PINWORM (Threadworm)

Topical—Mix together 1 drop each of lavender, oregano, clove, basil, myrtle, and German chamomile in 1 teaspoon of carrier oil and apply this mixture to the abdomen up to 6 times daily (1–5 years). Mix together 2 drops each of basil, eucalyptus, oregano, clove, and lavender and apply to the abdomen up to 6 times daily (6–17 years).

Oral—Take 1 drop each of clove, oregano, and lavender orally, 2 times daily for 21 days, and then rest 7 days before repeating another 21 days (6–11 years). Take 2 drops of oregano and 1 drop each of clove, basil, and lavender orally, 2 times daily for 21 days, and then rest 7 days before repeating another 21 days (12–17 years).

PLANTAR WARTS

Topical—Mix together 10 drops each of oregano and thyme, and 5 drops of melaleuca (tea tree), clove, and lemon, and then use a cotton swab to apply 1 drop of this mixture neat to the wart, 1 to 3 times daily (1–17 years).

PNEUMONIA

Seek medical attention if the child experiences rapid breathing without fever, painful cough, labored breathing, or has a weakened immune system.

Topical—Mix together 1 drop each of frankincense, lemon, lavender, and chamomile in 1 teaspoon of carrier oil and use enough of this mixture to cover the upper back and chest up to 3 times daily (birth–12 months). Mix together 1 drop each of myrtle, ginger, lemon, frankincense, thyme, and lavender in half a teaspoon of carrier oil and use enough of this mixture to cover the upper back and chest up to 3 times daily (1–5 years). Mix together 2 drops each of peppermint, eucalyptus, thyme, ginger, and lemongrass in half a teaspoon of carrier oil and use enough of this mixture to cover the upper back and chest up to 3 times daily (6–17 years).

Steam Inhalation—Add 1 drop each of melaleuca (tea tree), frankincense, and lavender to 1 pint of hot water and place near, but out of reach of the infant, up to 3 times daily (birth–12 months). Add 1 to 2 drops each of thyme, myrtle, pine, and cypress to 1 pint of hot water and place near, but out of reach of the child, up to 3 times daily (1–5 years). Add 1 to 2 drops each of cinnamon, eucalyptus, basil, lemongrass, and peppermint to 1 pint of hot water and place near the child up to 3 times daily (6–17 years).

Oral—Take 1 drop each of cinnamon, clove, and oregano orally, 3 times daily (6–11 years). Take 2 drops of cinnamon, and 1 drop each of clove, eucalyptus, and oregano, 3 times daily (12–17 years).

PSORIASIS

It is strongly advised that persons who experience psoriasis have further analysis including nutrition, allergies, and autoimmune tests. Some have found a multi-enzyme and probiotic helpful.

Homeopathic Remedies—Apply berberis aquifolium tincture cream to the affected area as instructed on the product label.

Topical—Mix together 1 drop each of lavender, cistus, frankincense, German chamomile, and melaleuca (tea tree) in 2 tablespoons of sesame seed oil and apply a small amount of this mixture up to 6 times daily. *Test on a small patch of skin first. Some essential oils and carrier oils will make the condition worse.*

RABIES

Only use in conjunction with Western medical options and with approval from a physician.

Topical—Mix together 10 drops each of thyme, melaleuca (tea tree), and frankincense, and then add 2 drops of this to 1 teaspoon of carrier oil and apply to the spine and affected area (birth–5 years). In addition, mix 1 drop of geranium in 10 drops of carrier oil and apply a small amount of this mixture behind the ears, 2 times daily (birth–5 years). Mix together 10 drops each of thyme, eucalyptus, melaleuca (tea tree), and frankincense, and then add 5 drops of this to half a teaspoon of carrier oil and apply to the spine and affected area (6–17 years). In addition, mix 1 drop of vetiver, geranium, and sandalwood in 5 drops of carrier oil and apply a small amount of this mixture behind the ears, 2 times daily (6–17 years).

Oral—Take 1 drop each of cinnamon, oregano, thyme, and melaleuca (tea tree) orally, 3 times daily (6–11 years). Take 1 drop each of cinnamon, oregano, eucalyptus, melaleuca (tea tree), and thyme orally, 3 times daily (12–17 years).

RASH

Seek medical attention if the rash is accompanied by fever.

Topical—Mix together 1 drop each of lavender and German chamomile in 3 teaspoons of carrier oil and apply a small amount of this mixture to the affected area up to 3 times daily (birth–5 years). Mix together 2 drops each of lavender, German chamomile, and melaleuca (tea tree) in 1 teaspoon of carrier oil and apply to the affected area up to 3 times daily (6–17 years).

RESPIRATORY SYNCYTIAL VIRUS (RSV)

Only use in conjunction with Western medical options.

Steam Inhalation—Place a bowl of hot water with 1 to 2 drops of frankincense next to, but out of reach of, the infant (birth–12 months) up to 3 times daily. Place a bowl of hot water with 2 drops each of myrtle and pine, and 1 drop of frankincense next to, but out of reach of, the child (1–5 years) up to 3 times daily. Place a bowl of hot water with 2 drops each of eucalyptus, myrtle, pine, and thyme next to the child up to 3 times daily (6–17 years).

Topical—Create a mixture of 1 drop each of lemon and frankincense in 2 teaspoons of carrier oil and apply a small amount of this mixture to the chest and upper back, 3 to 5 times daily (birth–12 months).

Create a mixture of 1 drop each of myrtle, ginger, pine, and thyme in 1 teaspoon of carrier oil and apply a small amount of this mixture to the chest and upper back, 3 to 5 times daily (1–5 years). Create a mixture of 1 to 2 drops each of eucalyptus, myrtle, peppermint, ginger, pine, and thyme in 1 teaspoon of carrier oil and apply a small amount of this mixture to the chest and upper back, 3 to 5 times daily (6–17 years).

Oral—Take 1 drop each of oregano, cinnamon, and lemon orally up to 3 times daily (6–11 years). Take 1 drop each of oregano, melaleuca (tea tree), thyme, lemon, and cinnamon up to 3 times daily (12–17 years).

RINGWORM

It is strongly encouraged that underlying gastrointestinal causes be investigated.

Topical—Mix together 1 drop each of lavender, German chamomile, and melaleuca (tea tree) in 1 teaspoon of carrier oil and apply a small amount of this mixture to the affected area, 3 times daily (birth–5 years). Mix together 2 drops each of lemongrass, rosemary, melaleuca (tea tree), and lavender in half a teaspoon of carrier oil and apply enough of the mixture to cover the affected area, 3 times daily (6–17 years).

Oral—Take 2 drops of lemongrass, and 1 drop each of German chamomile, cinnamon, and juniper, morning and evening (6–17 years).

RUBELLA (GERMAN MEASLES)

Those with rubella should avoid close proximity and contact with women who are pregnant.

Topical—Soak a clean cloth in 1 cup of cool water with 1 drop each of melaleuca (tea tree), lavender, and German chamomile, wring out, and wipe affected area, several times daily (birth–17 years). For aching joints mix together 1 drop of German chamomile, lavender, and copaiba in 1 teaspoon of carrier oil and apply a small amount to the affected joints (birth–5 years). For aching joints mix together 1 drop of eucalyptus, ginger, eucalyptus, lavender, German chamomile, and copaiba in half a teaspoon of carrier oil and apply a small amount to the affected joints (6–17 years).

SHIN SPLINTS

Topical—Mix together 2 drops each of balsam fir, copaiba, lemongrass, and peppermint in half a teaspoon of carrier oil and apply enough of the mixture to cover the shins up to 3 times daily (6–11 years). Mix together 2 drops each of balsam fir, copaiba, lemongrass, wintergreen, and peppermint in half a teaspoon of carrier oil and apply enough of the mixture to cover the shins up to 3 times daily (12–17 years).

SHOCK, EMOTIONAL

Inhalation—Add 1 to 2 drops each of lavender and lemon to a tissue and place near the child's nose to inhale (1–5 years). Add 1 to 2 drops of lavender and peppermint to a tissue and place near the child's nose to inhale (6–17 years). These oils can also simply be inhaled directly from the bottle.

Homeopathic Remedy—Give the child arnica 30C orally if the shock resulted from an injury or caused by pain.

SINUSITIS (Sinus Infection)

Topical—Mix together 1 drop each of pine, balsam fir, and melaleuca (tea tree) in 1 teaspoon of carrier oil and apply a small amount of this mixture to the forehead, nose, cheekbones, chest, and

upper back, 3 to 5 times daily (1–5 years). *Make sure to avoid the eyes.* Mix together 1 drop each of eucalyptus, peppermint, pine, and melaleuca (tea tree) in half a teaspoon of carrier oil and apply a small amount of this mixture to the forehead, nose, cheekbones, chest, and upper back, 3 to 5 times daily (6–17 years).

Oral—Take 1 drop each of pine, myrtle, lemon, and eucalyptus orally up to 3 times daily (6–17 years).

Steam Inhalation—Add 1 to 2 drops each of thyme, myrtle, pine, and cypress to 1 pint of hot water and place near, but out of reach of the child, up to 3 times daily (1–17 years).

SORE THROAT

Oral—Gargle with a mixture of 1 drop each of lemon, German chamomile, and vetiver with 1 teaspoon of honey in 4 ounces of water and spit out, up to 3 times daily (2–5 years). Gargle with 1 drop each of lemon, bergamot, and peppermint with 1 teaspoon of honey in 4 ounces of water and swallow every 1 to 3 hours until symptoms improve (6–11 years). Gargle with 1 to 2 drops each of lemon, bergamot, and peppermint with 1 teaspoon of honey in 4 ounces of water and swallow every 1 to 3 hours until symptoms improve (12–17 years).

Topical— Mix together 1 drop each of lavender, geranium, and lemon in 1.5 teaspoons of carrier oil and apply to the neck over the throat 2 times daily (birth–12 months). Mix together 10 drops of melaleuca (tea tree), and 5 drops each of thyme and lemon, then dilute 5 drops of the blend in 1 teaspoon of carrier oil, and apply to the front of the throat, 2 times daily (1–5 years). Mix together 10 drops of melaleuca (tea tree), and 5 drops each of thyme eucalyptus, and lemon, then dilute 5 drops of the blend in half a teaspoon of carrier oil, and apply to the front of the throat, 2 times daily (1–5 years).

Homeopathic Remedies—If the tonsils are swollen, give the child belladonna 30C.

SPRAINS

Topical—Dip a clean cloth in 2 drops each of lavender, German chamomile, and copaiba in 1 pint of cool water, wring out and wrap area of the sprain, 2 times daily the first day of the injury and then 2 times weekly thereafter (1–17 years). Mix together 1 drop each of lavender, copaiba, and German chamomile in half a teaspoon of carrier oil and apply enough of this mixture to cover the sprained area and widely around it up to 3 times daily (1–5 years). Mix together 1 drop each of basil, copaiba, balsam fir, and peppermint in half a teaspoon of carrier oil and apply enough of this mixture to cover the sprained area and widely around it up to 3 times daily (6–11 years). Mix together 1 drop each of basil, copaiba, balsam fir, wintergreen, and peppermint in 10 drops of carrier oil and apply this mixture to the sprained area and widely around it up to 3 times daily (12–17 years).

Homeopathic Remedies—Apply ruta graveolens and arnica cream to the sprain as indicated on the product label. Give the child Rhus tox orally 6C.

STOMACH FLU (Gastroenteritis)

Seek medical attention if the child is unable to retain fluids or hydration becomes an issue.

Topical—Mix together 1 drop each of ginger and basil in 10 teaspoons of carrier oil and massage to the abdomen in a clockwise circular motion up to 3 times daily (1–5 years). Mix together 1 to 2 drops each of peppermint, ginger, and juniper in 10 drops of carrier oil and massage to the abdomen in a clockwise circular motion up to 3 times daily (6–17 years).

Oral—Take a capsule with 1 drop each of lemongrass, peppermint, ginger, and oregano orally up to 3

times daily (6–11 years). Take 1 drop each of peppermint, ginger, clove, lemongrass, and oregano orally up to 3 times daily (12–17 years).

STREP THROAT

Oral—Gargle with a mixture of 1 drop each of lemon, thyme, and melaleuca (tea tree) with 1 teaspoon of honey in 4 ounces of water and spit out, up to 3 times daily (2–5 years). Gargle with 1 drop each of lemon, bergamot, and peppermint with 1 teaspoon of honey in 4 ounces of water and swallow every 1 to 3 hours until symptoms improve (6–11 years). Gargle with 1 to 2 drops each of lemon, melaleuca (tea tree), thyme, and peppermint with 1 teaspoon of honey in 4 ounces of water and swallow every 1 to 3 hours until symptoms improve (12–17 years). Take a capsule with 1 drop each of cinnamon, peppermint, lemongrass, and thyme, 2 times daily (6–17 years).

Topical—Mix together 1 drop each of lavender, geranium, and lemon in 1.5 teaspoons of carrier oil and apply to the neck over the throat 2 times daily (birth–12 months). Mix together 10 drops of melaleuca (tea tree), and 5 drops each of thyme and lemon, then dilute 5 drops of the blend in 1 teaspoon of carrier oil, and apply to the neck over the throat, 2 times daily (1–5 years). Mix together 10 drops of melaleuca (tea tree), and 5 drops each of thyme, eucalyptus, and lemon, then dilute 5 drops of the blend in half a teaspoon of carrier oil, and apply to the neck over the throat, 2 times daily (1–5 years).

Homeopathic Remedies—If the tonsils are swollen, give the child belladonna 30C.

STRAWBERRY HEMANGIOMA

Topical—Create a mixture of 1 to 2 drops each of helichrysum, cypress, frankincense, and geranium in 8 teaspoons of carrier oil and apply 1 to 2 drops of this mixture up to 3 times daily.

STRESS

Inhalation—Place 1 drop each of lavender, ylang ylang, and bergamot on a tissue and allow the child to inhale as desired (1–17 years).

Topical—Mix together 5 drops each of lavender, orange, ylang ylang, chamomile, and cedarwood, and then apply 1 drop of this mixture with equal parts of carrier oil to the wrists, 1 part essential oil to 5 parts carrier may be used for ages 3 to 5 (3–17 years).

STY (STYE)

Seek medical attention if redness spreads from the eye, tenderness extends to the skin around the eye, or the child experiences pain when moving the eye.

Topical—Mix together 1 drop each of lavender and frankincense in 1 teaspoon of carrier oil and apply a very small amount of this mixture widely around the eye—following the orbit—up to 3 times daily (1–17 years).

Other—Cover affected eye with a warm washcloth for several minutes several times daily.

SUNBURN

Topical—Mix together 5 drops of lavender oil and 1 drop of melaleuca (tea tree) in 1 teaspoon of aloe vera and cover the sunburned area up to 3 times daily (1–5 years). Mix together 5 drops of lavender oil and 1 drop each of melaleuca (tea tree) and peppermint in 1 teaspoon of aloe vera and cover the sunburned area up to 3 times daily (6–17 years).

SWIMMER'S EAR (Otitis Externa)

Most of the time swimmer's ear is characterized by pain when you pull the ear lobe. Seek medical attention if no pain occurs when pulling on the ear lobe and it is accompanied by fever.

Topical—Mix together 1 drop each of lavender and melaleuca (tea tree) in 1 to 2 teaspoons of carrier oil and apply a small amount of this mixture around the ear, then place 1 drop of this mixture on a cotton ball, and place the cotton ball in the ear. Replace the cotton ball every 30 minutes until symptoms are relieved (birth–12 months). Mix together 1 drop each of lavender, basil, thyme, and melaleuca (tea tree) in 1 teaspoon of carrier oil and apply a small amount of this mixture around the ear and on the fleshy part of the ear, then place 1 drop of this mixture on a cotton ball, and place the cotton ball in the ear—replace the cotton ball every 30 minutes until symptoms for the first 4 hours, then every 4 hours thereafter (2–17 years). In addition, apply 1 drop each of cinnamon, oregano, clove, and lemon in equal parts carrier oil to the bottoms of the feet every 2 to 4 hours (2–17 years).

SWOLLEN LYMPH GLANDS OR LYMPH NODES

Seek medical attention if the swollen gland makes breathing or swallowing difficult, or if accompanied by a fever over 104°F, night sweats, or red skin over the swollen lymph node.

Topical—Mix together 5 drops each of thyme, melaleuca (tea tree), and geranium, and then place 1 drop of this mixture diluted in 3 drops of carrier oil to the swollen lymph node/gland, 2 to 3 times daily (birth–5 years). Mix together 5 drops each of thyme, melaleuca (tea tree), and geranium, and then place 1 drop of this mixture neat on the swollen lymph node/gland up to 3 times daily (6–17 years).

TEETHING

Homeopathic Remedies—Give the infant chamomilla 30X or 6C orally.

Topical/Oral—Dilute 1 drop of copaiba, frankincense, or German chamomile in 1 tablespoon of carrier oil and rub a very small amount of this mixture on the gums (3 months–5 years).

THRUSH (Oral)

Oral—Swish for at least 30 seconds with a mixture of 1 drop each of lemon, geranium, and melaleuca (tea tree) in 4 ounces of water, and then spit out, up to 3 times daily (2–5 years). Swish for at least 30 seconds with a mixture of 1 drop each of palmarosa, geranium, and melaleuca (tea tree) in 4 ounces of water, and then spit out, up to 3 times daily (6–17 years).

THRUSH (Vaginal, Anal)

Topical—Mix 5 drops each of melaleuca (tea tree), German chamomile, and orange in 1 to 2 ounces of plain, unsweetened yogurt and apply a small amount to the anus or vagina at each diaper change or after each time using the toilet (birth–11 years). Mix together 5 drops each of melaleuca (tea tree), German chamomile, and orange in 1 tablespoon of carrier oil and apply to the affected area each time after using the toilet, or at least 3 times daily (12–17 years).

TONSILITIS

Topical—Mix together 10 drops of lavender, and 5 drops each of ginger, thyme, melaleuca (tea tree), and lemon, and then dilute 1 drop of this in half a teaspoon of carrier oil before applying to the outside of the throat and on the back up to 3 times daily (birth–5 years). Mix together 5 drops each of oregano, thyme, lemongrass, and eucalyptus, and then dilute 2 drops of this in half a teaspoon of carrier oil before applying to the outside of the throat and on the back up to 6 times daily (6–17 years).

years).

Oral—Gargle with a mixture of 1 drop each of lemon, thyme, and melaleuca (tea tree) with 1 teaspoon of honey in 4 ounces of water and spit out up to 3 times daily (2–5 years). Gargle with 1 drop each of lemon, bergamot, and peppermint with 1 teaspoon of honey in 4 ounces of water and swallow every 1 to 3 hours until symptoms improve (6–11 years). Gargle with 1 to 2 drops each of lemon, melaleuca (tea tree), thyme, and peppermint with 1 teaspoon of honey in 4 ounces of water and swallow every 1 to 3 hours until symptoms improve (12–17 years). Take a capsule with 1 drop each of cinnamon, lemongrass, oregano, and eucalyptus, 1 to 3 times daily (6–17 years).

Homeopathic Remedies—Give the child belladonna 30C orally.

TOOTHACHE

Topical/Oral—Dilute 1 drop of copaiba, frankincense, or German chamomile in 1 tablespoon of carrier oil and rub a very small amount of this mixture on the gums (3 months–5 years). Dilute 1 drop of clove or peppermint in 5 to 10 drops of carrier oil and apply a small amount of this mixture to the sore tooth up to 3 times daily (6–17 years).

TUBERCULOSIS

Only use in conjunction with Western medical treatment options.

Steam Inhalation—Place a bowl of hot water with 1 drop each of myrtle and frankincense next to, but out of reach of, the infant up to 3 times daily (birth–12 months). Place a bowl of hot water with 2 drops each of myrtle, vetiver, and pine next to, but out of reach of, the child up to 3 times daily (1–5 years). Place a bowl of hot water with 2 drops each of eucalyptus, myrtle, peppermint, and myrtle next to the child up to 3 times daily (6–17 years).

Topical—Mix together 10 drops each of lemon and melaleuca (tea tree), and 5 drops each of bergamot and frankincense, and dilute 2 to 5 drops of this mixture in half a teaspoon of carrier oil, and then apply to the chest and upper back, 2 times daily (birth–5 years). Mix together 10 drops of peppermint, and 5 drops each of myrtle, vetiver, ginger, and eucalyptus, and dilute 8 to 15 drops of this mixture in half a teaspoon of carrier oil, and then apply to the chest and upper back, 3 times daily (6–17 years).

Oral—Take 1 drop each of clove, vetiver, peppermint, oregano, and myrtle orally up to 3 times daily (6–17 years).

UMBILICAL CORD INFECTION

Topical—Place a trace amount of melaleuca (tea tree) on your fingertip (less than 1 drop) and apply this trace amount around the umbilical cord. Repeat the process with a trace amount of lavender on your fingertip. Repeat this process 2 times daily.

URINARY TRACT INFECTION

Topical— Mix together 10 drops of thyme, and 5 drops each of melaleuca (tea tree), bergamot, and German chamomile, then dilute 2 to 3 drops of this blend in half a teaspoon of carrier oil, and apply to the pelvic area and lower back (1–5 years). Use the same mixture and apply 3 to 5 drops diluted in half a teaspoon of carrier oil to the pelvic area and lower back (6–17 years).

Oral—Take 1 drop each of oregano, melaleuca (tea tree), lemon, and thyme orally up to 3 times daily (6–17 years).

VOMITING

[See NAUSEA](#)

WARTS (Non-plantar)

Topical— Mix together 10 drops each of oregano, and 5 drops of thyme, melaleuca (tea tree), clove, and lemon, and then use a cotton swab to apply 1 drop of this mixture neat to the wart, 1 to 3 times daily (1–17 years).

WARTS (Seed)

Warts that have little black dots in them, leading them to be called “seed warts.” These warts don’t truly have seeds. The black dots are tiny blood vessels that have grown up into the wart.

Other—Apply a small piece of duct tape to the seed warts and replace each time it falls off until the seed wart falls off or seed falls out (1–17 years).

Topical—Mix together 10 drops each of oregano, and 5 drops of thyme, melaleuca (tea tree), clove, and lemon, and then use a cotton swab to apply 1 drop of this mixture neat to the wart, 1 to 3 times daily (1–17 years).

Homeopathic Remedies—Apply thuja ointment as directed on the product label.

WHOOPING COUGH (Pertussis)

Only use in conjunction with Western treatment options.

Topical—Mix together 1 drop each of melaleuca (tea tree) and lavender in 3 teaspoons of carrier oil and apply a small amount of this mixture to the chest and upper back, several times daily (birth–12 months). Mix together 1 drop each of sandalwood, myrtle, pine, and cypress in half a teaspoon of carrier oil and apply a small amount of this mixture to the chest and upper back, several times daily (1–5 years). Apply 1 drop of oregano, thyme, and clove in 10 to 15 drops of carrier oil to the bottoms of the feet up to 3 times daily (1 to 5 years). Mix together 1 to 3 drops each of eucalyptus, myrtle, basil, and peppermint in half a teaspoon of carrier oil and apply a small amount of this mixture to the chest and upper back, several times daily (6–17 years). Apply 1 drop of one of the above oils (within the appropriate age range) to chest area of the child’s pajamas before going to bed.

Steam Inhalation—Add 1 drop each of melaleuca (tea tree) and lavender to 1 pint of hot water and place near but out of reach of the infant, up to 3 times daily (birth–12 months). Add 1 to 2 drops each of sandalwood, myrtle, pine, and cypress to 1 pint of hot water and place near, but out of reach of the child, up to 3 times daily (1–5 years). Add 1 to 3 drops each of myrtle, eucalyptus, basil, and peppermint to 1 pint of hot water and place near the child up to 3 times daily (6–17 years).

Oral—Take 1 to 2 drops each of oregano, cinnamon, myrrh, and lemon orally up to 3 times daily (6–17 years). Create a cough syrup by adding 5 drops of lemon, and 3 drops each of German chamomile and melaleuca (tea tree) to 1 cup of pure maple syrup and give 1 teaspoon of this mixture up to 3 times daily (6–17 years).

ESSENTIAL OILS FOR PREGNANCY, LABOR, AND CHILDBIRTH

Pregnancy is an incredible journey filled with joy, delight, and happiness, but along with those pleasant experiences comes emotional challenges, adjustment, and discomfort. Many essential oils can be a vital part of pregnancy that can make the nine months more pleasurable. Most mothers-to-be want to take the utmost care for their precious growing baby, and therefore it is always wise to err on the side of caution when it comes to essential oils and pregnancy.

The composition of the essential oil and the method of administration determine the level of risk for an essential oil being used during pregnancy. Oral administration has the greatest potential for toxicity, followed by rectal, vaginal, and topical administration.

According to *The Merck Manual* most substances with a molecular weight of less than 500 Daltons readily cross the placenta and enter the fetus's bloodstream.^[2382] Since the most common essential oil molecules are less than 225 Daltons, it is logical to suspect that essential oil molecules diffuse across the placenta similarly to the way they cross other epithelial barriers.

The greatest risk to a fetus from substances that cross the placenta is during the first trimester. Substances that are known to be toxic, cause abortions, or cause birth defects should be strictly avoided during this time.

The use of essential oils during pregnancy is a very controversial, hotly debated, and convoluted subject. There are hundreds of different opinions on which essential oils are safe to use and which are not during pregnancy. Frankly, very little clinical evidence exists that essential oils cause harm to the fetus, except in extreme cases (usually an intentional attempt to induce abortion with extreme amounts of oral ingestion). However, the safety of children and women who are pregnant is not something to take lightly. The general rule among aromatherapists is that essential oils that are questionable during pregnancy should also be avoided or used cautiously during lactation. This may be conservative, but again, what is more precious than your family and children?

The following table is meant to be used as a guide in conjunction with your healthcare practitioner's recommendation to determine which oils, if any, should be used during your pregnancy.

Common Essential Oils to Avoid during Pregnancy and Lactation

Aniseed (anise), basil (methyl chavicol CT), birch, blue cypress, camphor, carrot seed, cassia, cinnamon, fennel, hyssop, mugwort, myrrh, oregano, parsley seed and leaf, pennyroyal, ravensara, rue, sage, tansy (*Tanacetum vulgare*), thuja, tarragon, wintergreen, and wormwood

Common Carrier Oils to Avoid during Pregnancy and Lactation

Borage seed oil (oral), calendula (oral), evening primrose oil (oral)

***Common Essential Oils to Use
Cautiously during Pregnancy Lactation***

Bay laurel, blue spruce, citronella, clove, lavandin, lemongrass, lemon myrtle, lemon verbena, melissa, nutmeg rosemary, Spanish sage, spike lavender, and ravintsara (camphor CT)

***Preferred Essential Oils
during the First Trimester***

Balsam fir, bergamot, black pepper, cedarwood, chamomile (German, Roman), copaiba, coriander, cypress, frankincense, geranium, ginger, grapefruit, helichrysum, lavender, lemon, melaleuca (tea tree), myrtle, orange, neroli, patchouli, peppermint, petitgrain, pine, sandalwood, tangerine, vetiver, ylang ylang

***Preferred Essential Oils during the
Second and Third Trimester***

Balsam fir, bergamot, black pepper, cedarwood, chamomile (German, Roman), clary sage, copaiba, coriander, cypress, eucalyptus (globulus, radiata), frankincense, geranium, ginger, grapefruit, helichrysum, juniper, lavender, lemon, melaleuca (tea tree), myrtle, orange, neroli, patchouli, peppermint,* petitgrain, pine, sandalwood, tangerine, thyme (linalool CT), vetiver, ylang ylang

***Carrier Oils Recommended
during Pregnancy***

Primary: Sweet almond, apricot kernel, coconut, grapeseed, hazelnut, macadamia, peanut, safflower, sunflower, walnut

Secondary (used in smaller quantities up to 20% of carrier oil total): Aloe vera, avocado, jojoba, olive, sesame, wheat germ

* Some suggest that peppermint should be avoided during the last trimester to reduce the risk of interfering with milk supply. However, clinical research using pepper-mint gel, peppermint water, or menthol essence on the breasts for nipple cracks and soreness during breastfeeding has not reported any adverse effect of this practice, including reduced milk supply.^{[2383],[2384],[2385]} Based on the available research, it is reasonable to conclude that the topical application of diluted peppermint essential oil poses little risk of drying up milk supply during the third trimester.

Topical Dilution

Oral Maximum

<i>First Trimester</i>	1.0%–3.0% (1–4 drops of essential oil per teaspoon of carrier oil)	Not recommended
<i>Second and Third</i>	1.0%–5.0%	1–10 drops total daily, which

Unless otherwise indicated in this book.

As a cautionary measure, it is suggested that the internal use of essential oils be avoided during the first trimester and that dilutions of no more than 3% be used topically, particularly among women with a prior history of miscarriage. As always, do not use the same oil or oils for more than 21 days without a 7-day break to avoid sensitization and the remote possibility of tolerance buildup. Diffusion of the restricted oils during pregnancy and lactation may be safe (as it is the safest route of essential oil administration), but until this is proven definitively it may be wise to avoid diffusion of the questionable oils.

While I personally believe essential oils can be a wonderful part of a healthy pregnancy, the decision of which, if any, essential oils are appropriate for use during pregnancy ultimately remains solely with the mother-to-be and her OBGYN or other health-care practitioner. *Always consult your health-care practitioner before using essential oils during pregnancy and while nursing.*

This resource is meant to provide options for you to discuss with your health-care practitioner as you determine what is best for you and your treasured baby during this precious time of pregnancy.

HEALTH PROTOCOLS FOR GENERAL CONDITIONS OF PREGNANCY, LABOR, AND POST-PREGNANCY

ALLERGIES (Hay Fever)

Topical—Apply 1 drop of lavender neat under the nose (on the upper lip) up to 3 times daily (all trimesters).

Oral—Take 1 drop each of lavender, peppermint, and German chamomile in a capsule up to 3 times daily (2nd/3rd trimester). Alternately, take a capsule with 1 drop each of peppermint, lemon, and lavender in a capsule up to 3 times daily (2nd/3rd trimester).

ANXIETY

Topical—Mix together 1 drop each of lavender, orange and cedarwood in 1 teaspoon of carrier oil and apply a small amount of this mixture to the base of the skull, neck, and wrists (all trimesters).

Oral—Take 1 capsule filled with 2 drops of lavender, and 1 drop of orange 1 to 3 times daily (2nd/3rd trimesters).

Inhalation—Apply 1 drop each of cedarwood, orange, and lavender to a tissue and inhale as often as needed (all trimesters).

BACKACHE

Topical—Mix together 2 drops each of lavender, ginger, copaiba, and German chamomile in 2 teaspoons of carrier oil and massage a small amount of this mixture (enough to cover the back or sore area) in to the back and feet, 2 times daily (all trimesters).

BLEEDING (Reduce During Labor and Delivery)

Topical—Mix together 5 drops each of lavender, cypress, geranium, and helichrysum in 2 teaspoons of carrier oil and apply a small amount of this mixture to the lower back and insides of the ankles daily during the last 1 to 2 weeks of pregnancy (3rd Trimester).

BREAST-FEEDING

[See LACTATION PROBLEMS.](#)

BREAST ABSCESS

[See MASTITIS](#)

BREAST ENGORGEMENT

Topical—Mix together 2 drops each of lavender, geranium, cypress, and tangerine in 2 teaspoons of sesame seed carrier oil and apply enough of this mixture to cover the breast, gently massaging the mixture into the breast (all trimesters and post-pregnancy).

BREAST TENDERNESS

Topical—Mix together 1 drops each of bergamot, geranium, and lavender in 1 teaspoon of carrier oil and apply enough of this mixture to cover the breast up to 3 times daily (1st trimester). Mix together 2 drops each of bergamot and geranium, and 1 drop of clary sage in 1 teaspoon of carrier oil and apply enough of this mixture to cover the breast up to 3 times daily (2nd/3rd trimesters).

BREECH BABIES

Topical—Under the direction of your health-care practitioner, apply several drops of peppermint neat (dilute for sensitive skin) to the top of the abdomen in an arcing motion.

CAESAREAN SECTION SCARS

Topical—Mix together 1 drop each of frankincense, helichrysum, sandalwood, bergamot, and lavender in equal parts of carrier oil and apply a small amount of this mixture to the scar, 3 times daily. Apply the same mixture to the incision before scarring, but after the stitches have been removed.

CERVICAL SCAR TISSUE, SOFTEN

Topical—Mix together 1 drop each of frankincense, lavender, and helichrysum in half teaspoon of carrier oil and apply a small amount of this mixture to the pubic area up to 3 times daily (all trimesters).

COLDS/FLU

Oral—Take a capsule with 1 drop each of melaleuca (tea tree), lemon, and thyme up to 3 times daily (2nd/3rd trimester).

Topical—Apply 1 drop each of lemon, thyme, and melaleuca (tea tree) in equal parts carrier oil to the feet up to 3 times daily (all trimesters). Mix together 1 drop each of myrtle, pine, and ginger in half a teaspoon of carrier oil and apply a small amount of this mixture to the upper chest and back up to 3 times daily (all trimesters).

Inhalation—Add 1 to 2 drops each of myrtle, eucalyptus, and pine to 1 cup of hot water and inhale up to 3 times daily (all trimesters).

CONGESTION

Inhalation—Add 1 to 2 drops each of myrtle, eucalyptus, and pine to 1 cup of hot water and inhale up to 3 times daily (all trimesters).

Topical—Mix together 1 drop each of myrtle, pine, and ginger in half a teaspoon of carrier oil and apply a small amount of this mixture to the upper chest, back, and a trace amount across the bridge of the nose up to 3 times daily (all trimesters).

CONSTIPATION

Oral—Take 2 drops of ginger and 1 drop of lemon orally up to 3 times daily (2nd/3rd trimesters).

Topical—Mix together 1 drop each of lemon and ginger in 1 teaspoon of carrier oil and apply a small amount of this mixture to the lower back and the abdomen in a clockwise direction up to 5 times daily (all trimesters).

CRAMPS, LEG

Topical—Mix together 1 drop each of cypress, grapefruit, bergamot, lavender, and geranium in 1 teaspoon of carrier oil and apply to the legs morning and night (all trimesters).

CYSTITIS (Urinary Tract Infection)

Topical—Mix together 2 drops each of melaleuca (tea tree), geranium, and bergamot in 1 teaspoon of carrier oil and apply to the lower abdomen up to 3 times daily (all trimesters).

Other—Drink at least half your body weight in ounces of water daily. Drink two 8-ounce glasses of unsweetened cranberry or blueberry juice daily for 3 to 5 days.

DEPRESSION (During Pregnancy)

Inhalation—Place 1 drop each of orange, frankincense, and ylang ylang on a tissue and inhale as necessary (all trimesters). A few drops of these oils can also be added to a diffuser.

Topical—Massage 3 drops of orange oil to the feet in equal parts of carrier oil, morning and evening (all trimesters).

DEPRESSION, POSTPARTUM

Other—Consider a natural bioidentical progesterone and use as directed.

Inhalation—Apply 1 drop of frankincense, ylang ylang, orange, or grapefruit to palms, rub together, and place over nose and mouth to inhale as needed (all trimesters). Alternately, place 1 drop of each on a tissue and inhale as needed (all trimesters).

Topical—Apply 1 to 2 drops each of geranium, marjoram, and thyme diluted in half a teaspoon of carrier oil over the liver at night.

DIABETES, GESTATIONAL

Oral—With your health-care practitioner's approval, take a capsule with 2 drops of geranium, morning and evening (2nd/3rd trimester).

DIZZINESS

Inhalation—Place 1 drop each of peppermint and cypress on a tissue and inhale as often as necessary (all trimesters).

Topical—Mix together 1 drop each of peppermint, frankincense, and cypress in 1 teaspoon of carrier oil and apply a small amount of this mixture to the temples, back of the neck, and shoulders up to 3 times daily (all trimesters).

EDEMA (Swelling)

Oral—Take 1 drop each of grapefruit, lemon, and cypress in a capsule up to 3 times daily (2nd/3rd trimesters).

Topical—Massage 1 drop each of grapefruit, lemon, and cypress in a teaspoon of carrier oil to affected area in strokes toward the heart, 1 to 3 times daily (all trimesters).

Other—Drink at least half of your body weight in ounces daily.

ENDOMETRIOSIS

Other—Ask your health-care practitioner about the use of a bioidentical progesterone product.

Topical—Mix together 2 drops each of lavender, geranium, copaiba, and cypress in 1 to 2 teaspoons of carrier oil and apply a small amount of this mixture to the lower abdomen, followed by a warm towel, up to 3 times daily (all trimesters).

ENERGY BOOST DURING LABOR

Topical—Place 2 to 3 drops of peppermint oil in 1 cup of cool water and dip a clean cloth in this mixture. Apply to the back of the neck, refreshing regularly.

Inhalation—Place 2 drops of peppermint and 1 drop each of lemon and orange on a tissue and inhale as necessary. This mixture can also be diffused.

FATIGUE

Inhalation—Place 1 drop of peppermint or lemon neat on palm and rub palms together, cup over nose and mouth, and breathe deeply up to 3 times daily (all trimesters). Alternately, 1 drop of each of these oils can be placed on a tissue and inhaled as necessary (all trimesters).

Other—Take an aromatic bath with 2 drops each of bergamot, orange, and tangerine in half a teaspoon of carrier oil added to warm water.

FEAR

Inhalation—Place 1 drop each of ylang ylang, frankincense, and lavender on a tissue and inhale as needed (all trimesters).

FLATULENCE

Topical—Mix 2 drops each of lemon and lavender in 1 teaspoon of carrier oil and apply to the abdomen in a clockwise direction (all trimesters).

FLU

[See COLDS/FLU](#)

FLUID RETENTION

[See EDEMA \(SWELLING\)](#)

GASTROESOPHAGEAL REFLUX DISEASE (GERD, Acid Reflux)

[See HEARTBURN](#)

GROUP B STREP (After positive test to reduce transmission to baby)

Oral—Take a capsule with 2 drops each of melaleuca (tea tree) and lemon, and 1 drop of thyme, 2 times daily (3rd trimester).

Retention—Soak a tampon in 5 drops each of lemon and melaleuca (tea tree), 2 drops of thyme, and 1

tablespoon of carrier oil and insert in the vagina. Leave overnight and remove in the morning, for 7 days (3rd trimester).

HEADACHE

Topical—Mix together 1 drop each of peppermint and lavender in half a teaspoon of carrier oil and apply a small amount of this mixture to the temples, forehead, and back of the neck up to 3 times daily (all trimesters).

HEARTBURN

Oral—Take 1 drop each of lemon, orange, and ginger orally up to 3 times daily (2nd/3rd trimesters).

Topical—Mix together 2 drops each of ginger and lemon in 1 teaspoon of carrier oil and apply a small amount of this mixture on the upper chest (all trimesters).

HEMORRHOIDS

Topical—Mix together 1 drop each of lavender, cypress, and melaleuca (tea tree) in 10 drops of carrier oil and apply a drop of this mixture to the painful area, several times daily (all trimesters).

HIGH BLOOD PRESSURE

Inhalation—Place 1 drop each of neroli, ylang ylang, and lavender on a tissue and inhale regularly (all trimesters).

Oral—Take a capsule filled with 1 drop each of lavender, ylang ylang, and neroli, 2 times daily (2nd/3rd trimester).

HYPOTHYROIDISM

Topical—Mix together 2 drops of balsam fir and 1 drop of myrtle in half a teaspoon of carrier oil and apply over the throat and breastbone area up to 3 times daily (all trimesters).

INDUCING LABOR

Only to be used after the 39th week of pregnancy and with your health care practitioner's approval.

Oral—Take 60 ml of castor oil in 8 ounces of juice once (may cause diarrhea, nausea, and vomiting).

[\[2386\]](#)

Inhalation—Place 5 drops of clary sage on a tissue or cotton ball and inhale regularly (can also be placed under your pillow at night).

LACTATION PROBLEMS (INCREASING MILK SUPPLY)

Topical—Mix together 1 to 2 drops each of geranium and basil in half a teaspoon of carrier oil and apply to the breast away from the nipple (between nursing sessions) and on the bottoms of the feet, 1 to 3 times daily. Fennel may also be considered for short periods of time (3 to 5 days), but only if geranium and basil are ineffective. Do not apply these oils where the infant will potential ingest them while nursing, and wipe your breast clean before nursing.

LACTATION PROBLEMS (DECREASING MILK SUPPLY)

Oral—Take a capsule filled with 2 drops each of peppermint and oregano, 1 to 3 times daily. Alternately, drink one cup of herbal sage tea every 6 hours.

Topical—Cover the breasts with raw cold cabbage leaves by placing them inside your bra. Leave

them in place for a couple hours.

LABOR PROTOCOLS

With the exception of the preterm labor protocol, the labor protocols are meant to relax the mother, aid coping ability, ease pain and discomfort, and support normal contractions and transitions through the various stages of labor.

LABOR, PRETERM

Contact your physician, especially for labor prior to 37 weeks. Topical—Apply 3 to 5 drops of lavender oil in 10 drops of carrier oil to the lower abdomen and pubic area every 8 hours until preterm labor stops (all trimesters).

LABOR, EARLY

Topical—Massage the feet and lower back with a mixture of 2 drops each of lavender, tangerine, and copaiba in 1 teaspoon of carrier oil.

Other—Soak a large cloth in 1 cup of warm water and 2 drops each of clary sage, tangerine, and lavender, then wring out, and apply this cloth to the lower back and abdomen. Repeat as needed. Take an aromatic bath with 2 drops each of lavender and cedarwood in half a teaspoon of carrier oil added to the water

LABOR, ACTIVE/TRANSITION

Topical—Soak a small towel in cool water and 2 drops each of neroli, lavender, and tangerine, then wring out, and gently wipe forehead, face, neck, arms and any other areas that she desires.

LABOR, PUSHING

Inhalation—Place 2 drops each of lavender and neroli on a tissue and inhale between each contraction. Alternate with another tissue that has 3 drops each of tangerine, orange, and lemon.

LABOR, PLACENTAL DELIVERY

Topical—Soak a cloth in 2 drops each of lavender and geranium and 1 cup of warm water, then wring out, and apply to the lower abdomen. Cover with a warm towel. Replace each time the cloth cools.

LEG PAIN (Leg Labor)

Topical—Mix together 1 drop each of lavender, ginger, German chamomile, peppermint, and frankincense in half teaspoon of carrier oil and apply a small amount of this mixture to the affected area up to 4 times daily (3rd trimester).

MASTITIS

Topical—Massage a mixture of 3 to 5 drops of melaleuca (tea tree), thyme, and frankincense in 1 teaspoon of carrier oil on the breast, armpits, and to the bottoms of the feet, 1 to 3 times daily; cover with a warm compress after application.

MENSTRUAL-TYPE CRAMPING

Topical—Mix together 2 drops each of chamomile, lavender, geranium, and frankincense in 2 teaspoons of carrier oil and apply a small amount of this mixture to the lower abdomen up to 3 times daily (all trimesters).

Other—Place 2 drops each of chamomile and frankincense in a capsule and insert the capsule as far

back in the vagina as possible nightly until cramping subsides or after 7 days (all trimesters).

MISCARRIAGE

Topical—If your doctor informs you that you are having a miscarriage, apply 2 to 3 drops of clary sage in equal parts of carrier oil to the lower abdomen to support passing tissue. Apply 1 to 2 drops each of marjoram, basil, and lavender in equal parts carrier oil to the abdomen for pain.

Inhalation—Place 1 to 2 drops each of lavender, bergamot, orange, and ylang ylang on a tissue and inhale as needed.

MORNING SICKNESS

[See NAUSEA, MORNING SICKNESS](#)

MUSCLE CRAMPS

Topical—Mix together 1 drop each of lavender, balsam fir, and German chamomile in 1 teaspoon of carrier oil and massage a small amount of this mixture into the muscle up to 3 times daily (all trimesters).

MUSCLES, SORE

Topical—Mix together 1 to 2 drops each of lavender, ginger, and copaiba in 1 teaspoon of carrier oil and massage a small amount of this mixture into sore muscle(s) up to 3 times daily (all trimesters).

MUSCLE SPASMS

Topical—Mix together 1 drop each of lavender, petitgrain, and ginger in 1 teaspoon of carrier oil and apply a small amount of this mixture to the affected area up to 3 times daily (1st trimester). Mix together 2 drops each of ginger and lavender, and 1 drop of petitgrain and apply a small amount of this mixture to the affected area up to 3 times daily (2nd/3rd trimesters).

NASAL CONGESTION

Inhalation—Place 2 drops each of eucalyptus, tea tree, and peppermint in 1 cup of hot water and inhale from the bowl for 10 to 15 minutes up to 3 times daily (all trimesters).

NAUSEA, MORNING SICKNESS

Inhalation—Place 1 to 2 drops each of peppermint, lemon, and ginger on a tissue and inhale as necessary. Refresh the tissue every 4 hours (all trimesters).

Topical—Mix together 1 drop each of peppermint, lemon, and ginger in 1 teaspoon of carrier oil and apply a small amount of this mixture behind the ears and 1 drop of this mixture in the navel (all trimesters).

Oral—Take 1 drop each of ginger and peppermint in a capsule up to 3 times daily (2nd/3rd trimesters).

Other—Apply firm pressure to a point on your wrist that is three of your finger widths below the wrist and between your two arm bones, several times daily (all trimesters). Make sure to eat a high-protein meal at night.

NIPPLES (Cracked, Sore)

Topical—Mix together 2 drops of lavender in 1 teaspoon of carrier oil and apply to the nipples up to 3 times daily. Wipe off before breast-feeding (all trimesters and lactation).

PALPITATIONS (Heart)

Topical—Mix together 2 drops each of lavender, ylang ylang, and neroli in 1 teaspoon of carrier oil and apply a small amount of this mixture over the heart up to 3 times daily (all trimesters).

PELVIC PRESSURE

Oral—Take a capsule with 2 drops each of copaiba and tangerine up to 2 times daily (2nd/3rd trimester).

Topical—Mix together 1 drop each of copaiba, tangerine, peppermint, and German chamomile in 1 teaspoon of carrier oil and apply a small amount of this mixture to the pelvic area up to 3 times daily.

PERINEAL CARE (During Birth)

Topical—Apply a mixture of 1 drop of helichrysum with 10 drops of carrier oil to the perineum while pushing and during crowning.

PERINEAL CARE (Prior to Delivery)

Topical—To increase the elasticity of the perineum (the area between the anus and vagina that is often cut or torn during delivery) before delivery mix together 2 drops each of sandalwood, lavender, chamomile, and orange in 1 teaspoon of carrier oil and apply a small amount of this mixture to the perineum and lower part of the vagina daily during the last 6 weeks of your pregnancy (3rd trimester).

PERINEAL CARE (After Delivery)

Other—Mix together 5 drops each of lavender, neroli, grapefruit, tangerine, orange, and chamomile. Take a sitz bath by filling an ordinary bathtub with enough water to cover the hips and genital area, and then add 3 to 4 drops of the above mixture in equal parts carrier oil to the bath and soak.

Topical—Mix together 5 drops each of lavender, neroli, tangerine, helichrysum, chamomile, and geranium in 1 ounce of organic aloe vera juice and place this mixture in a spray bottle. Spray the vaginal and perineal area after each use of the toilet and as often as desired for soothing comfort.

POSTPARTUM HEMORRHAGE

This can be a life threatening situation. Seek medical care immediately.

Topical—Apply 1 to 2 drops each of helichrysum, geranium, and cypress over the lower back and lower abdomen in route to medical care.

PUBIC DIASTASIS

Topical—Mix together 2 drops of balsam fir, and 1 drop each of copaiba and pine in 1 teaspoon of carrier oil and apply a small amount of this to the pubic bones up to 3 times daily (all trimesters).

REST, PROMOTE DURING LABOR

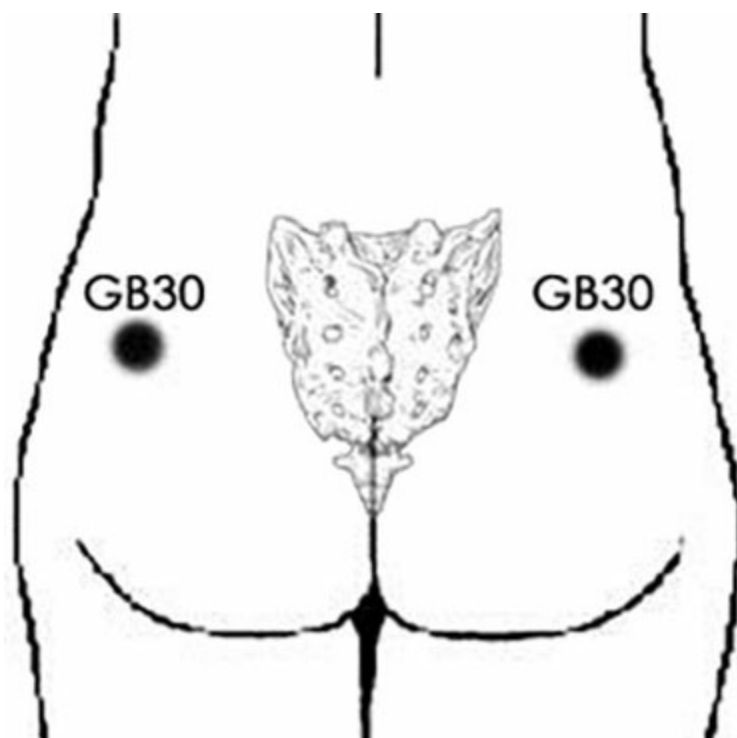
Inhalation—Place 2 drops each of lavender and cedarwood, and 1 drop of vetiver on a tissue or cotton ball and place under pillow to inhale.

Topical—Massage 1 drop of lavender and 10 drops of carrier oil to the shoulders and upper back every 2 to 4 hours.

ROUND LIGAMENT PAIN

Topical—Mix together 1 drop each of peppermint, lavender, frankincense, and ginger in 1 teaspoon of carrier oil and apply a small amount of this mixture to the lower abdomen and pelvic area up to 3

times daily (2nd/3rd trimesters).



SCIATIC PAIN

Other—Lie on your side and have another person apply pressure to acupressure point GB30 (pictured below), which can be found in the side of the buttocks by locating approximately the middle of the sacrum, and then moving out two-thirds of the way toward the hip. Apply firm pressure to this point (left or right side 1 at a time) with your thumb for about 30 seconds, and then release. Repeat this process until pain is relieved. Then repeat the entire process on the other side.

Topical—Mix together 2 drops each of vetiver, German chamomile, geranium, and copaiba in 2 teaspoons of sesame seed oil and apply some of this mixture to the lower back, hip area and down the leg up to 3 times daily.

SHORTNESS OF BREATH

Topical—Apply 2 drops of ginger in a teaspoon of carrier oil to the upper chest and back, 2 times daily.

SKIN BLEMISHES

Topical—Mix together 2 drops each of melaleuca (tea tree), thyme, orange, lavender, and frankincense in 3 teaspoons of carrier oil and apply a very small amount of this mixture to the blemish, morning and evening (all trimesters).

SLEEP PROBLEMS

Topical—Mix together 5 drops each of lavender, chamomile, and cedarwood and 2 drops of vetiver. Then massage 1 drop of this blend mixed in 5 drops of carrier oil to the bottom of each foot before retiring to bed (all trimesters).

STRETCH MARKS

Topical—Mix together 3 drops each of frankincense, lemon, sandalwood, and lavender in 2 tablespoons of coconut oil, 2 teaspoons of olive oil, and 1 teaspoon of avocado oil, and then gently apply a small amount of this mixture to the abdomen and hips daily (2nd/3rd trimesters).

TOXEMIA

Topical—Mix together 1 to 2 drops each of cypress, lavender, and ylang ylang in a teaspoon of carrier oil and apply to the ankles with massage strokes from the extremities to the middle of the body daily (all trimesters).

Oral—Take a capsule filled with 1 drop each of grapefruit, lemon, and ylang ylang, 1 to 3 times daily (2nd/3rd trimesters).

URINARY TRACT INFECTION (UTI)

Topical— Mix together 10 drops of thyme, and 5 drops each of melaleuca (tea tree), bergamot, and German chamomile, then dilute 3 to 5 drops of this blend in 1 teaspoon of carrier oil, and apply to the pelvic area and lower back all trimesters).

Oral—Take 1 drop each of melaleuca (tea tree), lemon, and thyme orally, 2 times daily (2nd/3rd trimesters).

Other—Drink at least half your body weight in ounces daily. Take a multistrain probiotic, 4 times daily.

URINATION (Trouble After Birth)

Other—Place 1 drop of peppermint in the toilet or other urine collecting water before sitting over water to urinate.

Topical—Apply 1 to 2 drops of juniper in 5 drops of carrier oil over the pelvic area.

Inhalation—Place 1 drop each of lavender and orange on a tissue and inhale regularly to calm the body.

UTERUS, HYPERSTIMULATED

Topical—Apply 3 drops of lavender and 2 drops of orange oil in 10 drops of carrier oil to the lower abdomen and pubic area (all trimesters).

VAGINA, INFLAMMATION OF

Topical—Mix together 1 drop each of chamomile, lavender, and bergamot in 1 teaspoon of carrier oil and apply a small amount of this mixture to the vagina up to 3 times daily (all trimesters).

VAGINAL YEAST INFECTION

Retention—Soak a tampon in 5 drops each of lavender and melaleuca (tea tree), 2 drops each of thyme and bergamot, and 1 tablespoon of carrier oil and insert in the vagina. Leave in overnight and remove in the morning for 7 days (2nd/3rd trimester).

Other—Take an aromatic bath with 3 drops each of melaleuca (tea tree), bergamot, and lavender in half a teaspoon of carrier oil added to warm bath water (1st trimester).

VARICOSE VEINS

Topical—Mix together 1 to 2 drops each of helichrysum, lemon, geranium, and cypress mixed in 2 teaspoons of grapeseed carrier oil and massage to the areas around the varicose veins (not directly on them) with massage strokes towards the direction of the heart, 1 to 3 times daily.

VARICOSITIES

Topical—Mix together 2 drops each of helichrysum, cypress, frankincense, and balsam fir mixed in 1 teaspoon of grapeseed carrier oil and gently apply some of this mixture to the affected area up to 5 times daily. Dip a clean cloth in a mixture of 2 drops each of balsam fir and cypress in 1 cup of cold

water and apply this over the affected are, 2 times daily.

Oral—Take a capsule with 3 drops of copaiba and 2 drops of tangerine, 2 times daily.

Other—Elevate your hips while laying down.

1,7-Di-Epi-Alpha-Cedrene

Helichrysum (*H. italicum*) 0.0%-6.8%

1,8-Cineole (Eucalyptol)

Eucalyptus (Globulus)	33.6%-83.9%
Niaouli (1,8-Cineole CT)	19.1%-76.3%
Niaouli (1,8-Cineole/Viridiflorol CT)	0.4%-75.0%
Eucalyptus (Radiata)	22.4%-74.3%
Bay Laurel	18.8%-68.8%
Ravintsara (1,8-Cineole CT)	53.8%-63.0%
Ravensara (1,8-Cineole CT)	31.0%-60.8%
Cajeput (Cajuput)	44.8%-60.2%
Cardamom	15.9%-55.6%
Rosemary (1,8-Cineole CT)	41.6%-52.4%
Sage (1,8-Cineole CT)	39.5%-50.3%
Niaouli (Viridiflorol/ Para-cymene/1,8 -cineole CT)	0.4%-47.0%
Niaouli (Viridiflorol CT)	0.1%-40.0%
Myrtle	6.1%-40.4%
Spike Lavender	28.0%-34.9%
Spanish Sage	13.0%-33.8%
Rosemary (Camphor CT)	9.0%-31.6%
Cardamom (Alpha-Terpinyl Acetate CT)	4.3%-27.2%
Rosemary (Alpha-Pinene CT)	5.3%-26.5%
Lavandin (Giant)	0.0%-26.1%
Sage (Camphor CT)	3.6%-24.7%
Thyme (Thuyanol-4 CT)	0.0%-21.2%
Rosemary (Borneol CT)	20.0%
Lavender (True English)	0.0%-19.8%
Sage (Wild)	5.1%-16.8%
Melaleuca (Tea Tree)	0.1%-16.5%
Sage (Alpha-Thujone CT)	1.9%-15.9%
Lavandin (Super)	0.0%-15.9%
Sage (Beta-Thujone CT)	5.0%-15.7%
Lavandin (Dutch)	0.0%-15.6%
Rosemary (Beta-Myrcene CT)	8.0%-14.5%
Thyme (Alpha-Terpeneol CT)	0.1%-13.2%
Rosemary (Bornyl Acetate CT)	5.3%-12.8%
Camphor (Camphor CT)	1.0%-12.0%
Ravintsara (Camphor CT)	1.0%-11.3%
Ginger	0.2%-10.9%
Turmeric (Leaves)	0.0%-10.5%
Lavandin (Abrialis)	6.7%-10.4%
Lavandin (Grosso)	4.0%-10.2%
Rosemary (Beta-Myrcene CT)	3.4%-9.0%
Lavender (Brazilian)	7.9%
Spearmint (Pulegone-Menthone-Isomenthone CT)	1.6%-7.8%
Spearmint (Carvone CT)	1.0%-6.8%
Peppermint	4.1%-6.7%

Niaouli ((E)-Nerolidol CT)	0.1%-6.6%
Spearmint (Piperitone Oxide CT)	0.4%-5.8%
Spearmint (Menthone CT)	5.2%
Basil (Linalool CT)	0.2%-5.0%
Spearmint (Linalool CT)	4.7%-4.9%
Cinnamon Bark	0.0%-4.6%
Lavender (Bulgarian)	0.4%-4.2%
Ravensara (Limonene CT)	0.1%-3.9%
Thyme (Thymol CT)	0.0%-3.8%
Spearmint (Piperitenone Oxide CT)	0.4%-3.5%
Lavender (French)	0.0%-3.4%
Thyme (Carvacrol CT)	0.0%-3.1%
Camphor (Linalool CT)	0.1%-3.0%
Ravensara (Methyl Eugenol CT)	0.0%-1.4%
Spearmint (Cis-Ocimenone CT)	1.2%

1-Octanol

Frankincense (<i>B. carterii</i>)	0.0%-11.9%
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2,2,6-Trime thylcyclohe xanone

Cistus	0.9%-11.8%
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2,4,6,9-Tetramethyldec-8-en-3,5-dione

Helichrysum (ssp. <i>italicum</i>)	0.0%-4.8%
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2-Carene

Turmeric (Rhizome, Distilled)	5.4%-61.8%
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2-Methoxycinnamaldehyde

Cassia (Bark)	0.0%-13.2%
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2-Methylbutyl Angelate

Chamomile (Roman)	13.0%-20.3%
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2-Methylpentan-3-one

Helichrysum (ssp. <i>italicum</i>)	0.0%-8.2%
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2-Methyl-Cyclohexyl Pentanoate

Helichrysum (<i>H. italicum</i>)	0.0%-11.1%
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2-Phenylethyl Alcohol (2-Phenylethanol)

Rose (Indian)	0.4%-9.6%
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Rose (Turkish)	0.5%-1.2%
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Rose (Bulgarian)	0.2%-1.2%
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3-Methyl-2-Butenyl Acetate

Ylang Ylang (French I)	4.2%
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3-Methyl-3-Buten-1-ol Acetate

Ylang Ylang (French I)	2.2%
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3-Methylbutyl Isobutyrate

Chamomile (Roman)	5.2%-6.3%
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3-Undecyne

Lemongrass (West Indian)	1.5%-6.1%
3.5-Ditert-Butyl Phenol	
Turmeric (Rhizome, Solvent Extracted)	0.0%-5.4%
4-Methylhexan-3-one	
Helichrysum (ssp. <i>italicum</i>)	0.0%-10.5%
4,6,9-Trimethyldec-8-en-3,5-dione	
Helichrysum (ssp. <i>italicum</i>)	0.3%-19.8%
4.6-Dimethyloctan-3,5-dione	
Helichrysum (ssp. <i>italicum</i>)	0.0%-11.3%
Acetophenone	
Cassia (Bark)	0.0%-6.9%
Alloaromadendrene	
Ravintsara (Camphor CT)	0.0%-4.4%
Alpha-Bergamotene	
Copaiba	1.0%-11.8%
Basil (Linalool CT)	2.6%-11.2%
Alpha-Bisabolol	
German Chamomile	0.1%-44.2%
Lavender (Brazilian)	13.1%
Sandalwood (<i>S. spicatum</i>)	4.9%-10.7%
Alpha-Bulnesene (Delta-Guaiene)	
Patchouli (Brazilian)	6.9%-55.1%
Patchouli (Indonesian, Malaysian, Vietnamese)	6.8%-14.7%
Patchouli (Chinese)	0.9%-11.8%
Alpha-Cadinol	
Citronella	0.5%-8.0%
Pine	0.0%-7.7%
Ylang Ylang (French IV)	1.5%
Alpha-Cedrene	
Cedarwood (Virginian, Wood)	4.0%-35.0%
Cedarwood (Himalayan, Wood)	0.0%-15.8%
Helichrysum (<i>H. italicum</i>)	0.0%-9.6%
Frankincense (<i>B. carterii</i>)	0.0%-6.1%
Alpha-Copaene (Copaene)	
Copaiba	1.6%-18.2%
Frankincense (<i>B. carterii</i>)	0.0%-5.5%
Myrrh	0.0%-5.5%
Alpha-Eudesmol	
Blue Cypress (Wood)	7.6%-11.2%
Spikenard (Valeranone CT)	3.0%
Alpha-Farnesene ((E,E)-Alpha-Farnesene)	

Ylang Ylang (Madagascan III)	> 17.4%
Ylang Ylang Complete	3.9%-12.9%
Ylang Ylang (Madagascan II)	> 12.7%
Ylang Ylang (French IV)	10.1%
Ginger	0.0%-7.0%
Ylang Ylang (Solvent Extracted)	6.2%-6.8%
Carrot Seed	0.2%-5.9%
Ylang Ylang (French I)	1.6%
Alpha-Guaiene	
Patchouli (Chinese)	1.7%-21.5%
Patchouli (Indonesian, Malaysian, Vietnamese)	4.3%-13.4%
Patchouli (Brazilian)	2.9%-12.0%
Alpha-Gurjunene	
Spikenard (Calarene CT)	0.1%-9.1%
Alpha-Himachalene	
Cedarwood (Himalayan, Wood)	10.4%-30.8%
Cedarwood (Atlas)	4.2%-16.4%
Alpha-Humulene	
Sage (Wild)	4.0%-13.5%
Ylang Ylang (Solvent Extracted)	10.7%-10.8%
Copaiba	1.1%-8.6%
Juniper (Needles)	0.8%-6.2%
Ylang Ylang (French IV)	6.2%
Sage (Alpha-Thujone CT)	0.0%-5.6%
Juniper Berry	1.3%-4.6%
Silver Fir (<i>A. alba</i>)	0.8%-4.6%
Alpha-Longifolene	
Pine	0.0%-9.6%
Alpha-Longipine ne	
Ylang Ylang (Solvent Extracted)	6.8%-6.9%
Vetiver	0.0%-4.2%
Alpha-Myrcene	
Tangerine (Distilled)	0.0%-4.2%
Ravintsara (1,8-Cineole CT)	0.0%-3.2%
Alpha-Patchoulene	
Patchouli (Chinese)	0.0%-9.1%
Patchouli (Indonesian, Malaysian, Vietnamese)	1.8%-8.0%
Patchouli (Brazilian)	5.2%-6.7%
Alpha-Phellandrene	
Turmeric (Leaves)	8.0%-57.8%
Fennel (Trans-Anethole CT)	0.1%-10.5%
Turmeric (Rhizome, Distilled)	0.5%-9.4%
Blue Tansy (Sabinene CT)	7.1%-9.2%
Black Pepper	0.0%-8.6%
Rosemary (Alpha-Pinene CT)	0.1%-7.9%

Camphor (Camphor CT)	0.2%-6.3%
Nutmeg (East Indian)	0.0%-5.8%
Ravensara (Sabinene CT)	1.1%-2.8%
Ravensara (Alpha-Terpinene CT)	1.2%-1.3%
Alpha-Pinene	
Cedarwood (Atlas)	14.9%-79.4%
Frankincense (<i>B. sacra</i>)	5.3%-78.5%
Frankincense (<i>B. frereana</i>)	2.0%-64.7%
Myrtle	14.7%-64.5%
Cypress	30.0%-64.2%
Frankincense (<i>B. carterii</i>)	2.0%-64.0%
Juniper Berry	18.3%-62.3%
Rosemary (Alpha-Pinene CT)	14.1%-62.2%
Cistus (Alpha-Pinene CT)	5.3%-56.0%
Blue Cypress (Leaves)	35.9%-55.6%
Pine	14.8%-51.1%
Juniper (Leaves)	1.4%-45.6%
Galbanum	5.4%-36.6%
Rosemary (Borneol Acetate CT)	7.7%-35.8%
Silver Fir (<i>A. alba</i>)	2.9%-31.7%
Niaouli (Viridiflorol CT)	0.2%-27.7%
Nutmeg (East Indian)	10.2%-26.5%
Balsam Fir	6.2%-25.8%
Niaouli (1,8-Cineole CT)	0.8%-25.0%
Rosemary (Camphor CT)	6.7%-24.7%
Blue Spruce	4.1%-23.8%
Tsuga	16.4%-23.7%
Helichrysum (<i>H. italicum</i>)	9.3%-21.7%
Fennel	0.8%-20.0%
Nutmeg (West Indian)	9.4%-19.9%
Spanish Sage	4.9%-17.5%
Niaouli (Viridiflorol/ Para-cymene/1,8 -cineole CT)	0.0%-17.0%
Black Pepper	0.3%-16.7%
Spruce (Black)	7.4%-16.6%
Rosemary (Beta-Myrcene CT)	8.8%-16.5%
Rosemary (1,8-Cineole CT)	5.2%-15.8%
Coriander	1.2%-15.5%
Rosemary (Verbenone CT)	2.5%-14.7%
Eucalyptus (Globulus)	4.5%-14.2%
Goldenrod	0.0%-13.8%
Fennel (Trans-Anethole CT)	0.0%-12.4%
Eucalyptus (Radiata)	2.0%-11.9%
Helichrysum (ssp. <i>italicum</i>)	0.1%-8.6%
Ravensara (Sabinene CT)	5.6%-8.1%
Rosemary (Borneol CT)	8.3%
White Fir (<i>A. concolor</i>)	4.4%-7.9%
Niaouli (1,8-Cineole/Viridiflorol CT)	1.3%-7.9%
Bay Laurel	1.9%-7.7%
Ravensara (Limonene CT)	3.0%-6.4%
Sage (Alpha-Thujone CT)	0.1%-5.9%
Sage (Beta-Thujone CT)	0.1%-5.5%

Sage (Camphor CT)	0.1%-5.3%
Ravintsara (1,8-Cineole CT)	3.7%-5.0%
Ravintsara (Camphor CT)	2.1%-5.0%
Blue Tansy (Sabinene CT)	2.1%-4.9%
Camphor (Camphor CT)	2.0%-4.7%
Ravensara (Alpha-Terpinene CT)	3.9%-4.5%
Cistus (<i>Viridiflorol-Trans-Pinocarveol CT</i>)	0.1%-4.5%
Niaouli (E-Nerolidol CT)	0.0%-4.5%
Fennel (Methyl Chavicol CT)	0.2%-3.6%
Petitgrain (Mandarin)	1.7%-2.8%
Orange (Cold-pressed/expressed)	0.5%-2.4%
Ravensara (Methyl Eugenol CT)	0.2%-1.2%
Alpha-Santale ne	
Turmeric (Rhizome, Distilled)	0.8%-6.6%
Alpha-Seline ne	
Spikenard (Nardol CT)	9.2%
Helichrysum (ssp. <i>microphyllum</i>)	3.8%-5.4%
Helichrysum (<i>H. italicum</i>)	0.0%-4.8%
Spearmint (Cis-Ocimenone CT)	1.7%
Alpha-Terpine ne	
Ravensara (Alpha-Terpinene CT)	25.3%-27.7%
Ravensara (1,8-Cineole CT)	0.0%-12.4%
Melaleuca (Tea Tree)	7.9%-10.4%
Marjoram	2.8%-8.2%
Ravensara (Methyl Eugenol CT)	0.6%-7.8%
Petitgrain (Mandarin)	0.0%-7.4%
Ravensara (Limonene CT)	1.8%-7.1%
Oregano (Terpinen-4-ol CT)	2.8%-5.9%
Nutmeg (East Indian)	0.1%-5.2%
Lime (Distilled)	0.4%-3.0%
Spearmint (Linalool CT)	0.9%-3.0%
Ravensara (Methyl Chavicol CT)	0.1%-0.8%
Alpha-Terpine ol	
Thyme (Alpha-Terpineol CT)	40.9%-90.4%
Cedarwood (Himalayan, Needles)	30.2%
Niaouli (Viridiflorol/ Para-cymene/1,8 -cineole CT)	0.5%-24.5%
Lavender (Munstead)	19.2%-20.6%
Eucalyptus (Radiata)	0.0%-15.2%
Niaouli (1,8-Cineole CT)	0.0%-15.0%
Clary Sage	1.8%-14.3%
Thyme (Linalool CT)	0.0%-14.2%
Neroli	4.6%-14.0%
Niaouli (1,8-Cineole/Viridiflorol CT)	0.0%-14.0%
Thyme (Thuyanol-4 CT)	2.0%-13.9%
Niaouli (Viridiflorol CT)	1.5%-13.6%
Petitgrain (Bergamot)	7.1%-12.9%
Cajeput	5.9%-12.5%
Palo Santo (Wood)	5.8%-10.9%

Fennel	0.1%-10.5%
Ravintsara (1,8-Cineole CT)	3.8%-10.3%
Thyme (Carvacrol CT)	0.0%-8.2%
Oregano (Terpinen-4-ol CT)	5.0%-7.6%
Cardamom (Alpha-Terpinyl Acetate CT)	2.1%-7.4%
Lime (Distilled)	0.0%-7.4%
Marjoram	4.9%-6.9%
White Fir (<i>A. concolor</i>)	1.2%-6.9%
Thyme (Thymol CT)	0.0%-6.1%
Lavender (True English)	1.5%-6.0%
Rosemary (Verbenone CT)	2.4%-4.9%
Rosemary (1,8-Cineole CT)	0.0%-4.9%
Cassia (Leaves)	0.0%-4.2%
Lavender (Indian)	1.2%-3.8%
Sage (1,8-Cineole CT)	2.6%-3.1%
Rose (Indian)	0.1%-2.7%
Spike Lavender	0.8%-1.6%

Alpha-Terpinolene (Terpinolene)

Turmeric (Leaves)	11.5%-26.4%
Niaouli (Viridiflorol/ Para-cymene/1,8 -cineole CT)	0.1%-19.2%
Niaouli (1,8-Cineole, Viridiflorol CT)	1.4%-8.3%
Cypress	4.5%-6.6%
Petitgrain (Mandarin)	0.6%-4.6%

Alpha-Terpinyl Acetate

Cardamom (Alpha-Terpinyl Acetate CT)	10.2%-68.2%
Cardamom (1,8-Cineole CT)	0.9%-35.3%
Bay Laurel	0.0%-14.6%
Neroli	0.2%-11.7%
Niaouli (1,8-Cineole CT)	0.0%-11.4%
Cypress	0.0%-6.6%
Niaouli (Viridiflorol/ Para-cymene/1,8-cineole CT)	0.0%-5.0%
Sage (1,8-Cineole CT)	1.4%-2.9%
Ravintsara (Camphor CT)	0.0%-2.3%

Alpha-Thujene

Frankincense (<i>B. carterii</i>)	1.0%-52.4%
Frankincense (<i>B. frereana</i>)	0.0%-33.1%
Frankincense (<i>B. sacra</i>)	0.9%-6.6%
Ravensara (Limonene CT)	0.4%-2.1%
Ravensara (Sabinene CT)	1.2%-1.6%
Ravensara (Alpha-Terpinene CT)	1.2%-1.3%

Alpha-Thujone

Sage (Alpha-Thujone CT)	24.5%-52.9%
Sage (Wild)	14.1%-29.8%
Sage (Camphor CT)	2.1%-28.6%
Sage (Beta-Thujone CT)	2.2%-18.4%
Sage (1,8-Cineole CT)	0.1%-9.9%

Alpha-Turmerone

Turmeric (Rhizome, Solvent Extracted)	6.5%-53.4%
Turmeric (Rhizome, Distilled)	0.0%-44.1%
Alpha-Vetivone	
Vetiver	2.0%-6.3%
Alpha-Zingiberene	
Lemon Verbena (Leaves)	2.8%-5.7%
Lemon Verbena (Stems)	1.9%-3.7%
Anethole	
Cedarwood (Himalayan, Needles)	14.6%
Aristolene	
Spikenard (Calarene CT)	0.0%-15.6%
Aromadendrene	
Ylang Ylang (French IV)	1.5%
ar-Curcumene	
Ginger	1.9%-16.7%
Turmeric (Rhizome, Distilled)	0.5%-6.6%
Lemon Verbena (Stems)	1.3%-6.1%
Lemon Verbena (Leaves and stems)	3.0%-5.7%
Helichrysum (ssp. <i>italicum</i>)	0.9%-4.6%
Lemon Verbena (Leaves)	0.6%-1.7%
ar-Turmerone	
Turmeric (Rhizome, Distilled)	5.4%-61.8%
Turmeric (Rhizome, Solvent Extracted)	5.4%-33.2%
Ginger	0.0%-12.8%
Benzaldehyde	
Cinnamon Bark	0.6%-9.9%
Benzyl Acetate	
Ylang Ylang (French I)	27.5%
Ylang Ylang (Madagascan I)	3.3%-8.0%
Benzyl Benzoate	
Cinnamon Bark	0.3%-15.1%
Ylang Ylang (Madagascan I)	4.3%-14.9%
Ylang Ylang (Madagascan II)	5.3%-12.3%
Ylang Ylang (Madagascan III)	5.9%-12.8%
Ylang Ylang (Complete)	0.0%-7.6%
Ylang Ylang (French I)	6.1%
Benzyl Salicylate	
Ylang Ylang (French IV)	4.1%
Beta-Bisabolene	
Copaiba	1.0%-12.7%
Ginger	0.0%-7.8%
Lemon (Distilled)	0.0%-4.9%

Beta-Bisabolol

Vetiver 0.0%-4.7%

Beta-Caryophyllene

Black Pepper 1.4%-70.4%

Copaiba 36.5%-53.3%

Niaouli (1,8-Cineole/Viridiflorol CT) 0.5%-28.0%

Niaouli (Viridiflorol CT) 1.3%-24.6%

Ylang Ylang (Madagascan III) 14.8%-21.5%

Thyme (Thuyanol-4 CT) 0.8%-20.3%

Sage (Wild) 5.2%-19.8%

Ylang Ylang (Madagascan II) 1.7%-19.6%

Ylang Ylang (Complete) 1.5%-18.8%

Melissa 0.1%-15.3%

Clove 3.1%-13.0%

Thyme (Linalool CT) 0.5%-12.3%

Ylang Ylang (Madagascan I) 1.1%-11.2%

Myrrh 4.4%-10.9%

Carrot Seed 0.0%-10.7%

Cinnamon Bark 0.7%-10.4%

Thyme (Carvacrol CT) 0.0%-10.3%

Juniper (Needles) 0.8%-10.3%

Thyme (Thymol CT) 0.0%-10.3%

Thyme (Geraniol CT) 0.3%-9.6%

Niaouli ((E)-Nerolidol CT) 0.5%-8.7%

Spanish Sage 1.2%-8.5%

Silver Fir (*A. alba*) 2.2%-8.4%

Ravensara (Limonene CT) 1.5%-8.4%

Thyme (Thymol CT) 0.0%-7.8%

Cajeput (Cajuput) 3.8%-7.6%

Spearmint (Linalool CT) 4.4%-6.3%

Lavender (True English) 2.0%-6.1%

Camphor (Camphor CT) 1.5%-5.5%

Sage (1,8-Cineole CT) 1.4%-5.5%

Lavender (Bulgarian) 1.7%-5.2%

Clary Sage 3.2%-5.1%

Helichrysum (*H. italicum*) 2.0%-5.0%

Pine 0.6%-4.9%

Sage (Alpha-Thujone CT) 0.0%-4.7%

Lemon Verbena (Leaves) 0.4%-4.3%

Lavender (Indian) 0.9%-4.0%

Ravintsara (Linalool CT) 0.5%-2.2%

Spike Lavender 0.5%-1.9

Ravensara (Methyl Chavicol CT) 0.4%-1.8%

Ravensara (Methyl Eugenol CT) 0.1%-0.9%

Beta-Cedrene

Cedarwood (Virginian, Wood) 2.0%-8.9%

Beta-Cubebene

Goldenrod 20.5%-26.9%

Galbanum 0.0%-4.9%

Beta-Curcumene	
Ylang Ylang (French IV)	2.7%
Beta-Curcumene-12-ol	
Sandalwood (<i>S. spicatum</i>)	0.0%-7.2%
Beta-Elemene	
Palo Santo (Leaves, Aerial Parts)	11.3%-14.1%
Myrrh	4.4%-10.9%
Frankincense (<i>B. frereana</i>)	0.0%-2.7%
Frankincense (<i>B. sacra</i>)	0.0%-2.6%
Beta-Eudesmol	
Blue Cypress (Wood)	8.5%-14.0%
Black Pepper	0.0%-9.7%
Blue Tansy (Chamazulene CT)	3.0%-7.0%
Beta-Farnesene ((E)-Beta-Farnesene)	
Ginger	0.0%-14.7%
German Chamomile	2.3%-14.0%
Lavender (Bulgarian)	1.0%-4.7%
Lavender (True English)	0.1%-4.2%
Carrot Seed	0.5%-4.0%
Beta-Himachalene	
Cedarwood (Atlas)	9.9%-40.4%
Cedarwood (Himalayan, Wood)	12.3%-38.3%
Beta-Himachalene Oxide	
Cedarwood (Himalayan, Wood)	0.0%-14.9%
Beta-Maaliene	
Spikenard (Calarene CT)	5.6%-10.2%
Beta-Ocimene ((E,Z)-Beta-Ocimene, Ocimene)	
Frankincense (<i>B. sacra</i>)	0.0%-32.3%
Palo Santo (Leaves, Aerial Parts)	13.0%-20.8%
Lavender (French)	0.2%-18.1%
Lavender (True English)	0.0%-7.8%
Lavender (Bulgarian, Z-Beta-Ocimene)	1.7%-7.7%
Neroli	0.0%-6.6%
Lavandin (Abrialis)	4.0%-5.5%
Lavender (Bulgarian, E-Beta-Ocimene)	1.0%-4.2%
Petitgrain (Bergamot, E-Beta-Ocimene)	3.1%-4.1%
Lavender (Polish)	1.9%-2.9%
Beta-Patchoulene	
Patchouli (Chinese)	0.0%-5.8%
Beta-Phellandrene	
Juniper (Needles)	3.7%-25.2%
Balsam Fir	4.4%-23.1%
Galbanum	0.1%-22.7%
Lavender (True English)	0.0%-16.0%

Bay Laurel	0.0%-10.5%
Spanish Sage	0.1%-9.3%
White Fir (<i>A. concolor</i>)	1.1%-6.5%
Petitgrain (Mandarin)	0.0%-6.3%
Tsuga	0.0%-4.4%
Ginger	0.2%-4.3%
Black Pepper	0.0%-3.2%
Spearmint (Pulegone-Menthone-Isomenthone CT)	0.0%-3.0%
Ravensara (Limonene CT)	1.0%-2.9%

Beta-Pinene

Galbanum	45.5%-66.3%
White Fir (<i>A. Concolor</i>)	41.5%-52.2%
Balsam Fir	27.3%-38.0%
Lemon (Distilled)	0.6%-31.5%
Pine	1.8%-29.4%
Black Pepper	0.7%-25.6%
Cedarwood (Atlas)	2.4%-21.4%
Lime (Cold-pressed/expressed)	0.1%-19.2%
Neroli	3.5%-19.1%
Nutmeg (West Indian)	7.3%-18.8%
Nutmeg (East Indian)	0.0%-17.7%
Spanish Sage	4.6%-17.3%
Lemon (Cold-pressed/expressed)	0.1%-15.8%
Silver Fir (<i>A. alba</i>)	0.5%-15.5%
Sage (Camphor CT)	1.4%-14.5%
Lime (Distilled)	0.9%-12.6%
Bergamot (Cold-pressed/expressed)	0.1%-12.1%
Rosemary (Alpha-Pinene CT)	1.1%-12.0%
Blue Tansy (Sabinene CT)	5.3%-10.1%
Goldenrod	0.0%-9.3%
Peppermint	0.1%-9.2%
Blue Spruce	0.0%-8.8%
Ravensara (Sabinene CT)	3.9%-7.7%
Sage (Beta-Thujone CT)	1.0%-7.7%
Rosemary (1,8-Cineole CT)	4.8%-7.5%
Sage (1,8-Cineole CT)	3.3%-7.3%
Lemon (Distilled)	0.0%-6.9%
Camphor (Camphor CT)	0.0%-6.3%
Juniper Berry	1.7%-5.4%
Eucalyptus (Globulus)	0.3%-5.2%
Niaouli (1,8-Cineole CT)	0.5%-5.0%
Niaouli (Viridiflorol CT)	0.4%-5.0%
Sage (Alpha-Thujone CT)	0.7%-4.8%
Bay Laurel	1.4%-4.7%
Turmeric (Leaves)	0.1%-4.7%
Bergamot (Distilled)	0.8%-4.4%
Petitgrain (Bergamot)	1.6%-3.6%
Ravintsara (1,8-Cineole CT)	0.0%-3.5%
Rosemary (Camphor CT)	2.5%-3.4%
Ravensara (Alpha-Terpinene CT)	2.7%-2.9%
Ravensara (Limonene CT)	2.2%-2.9%

Spike Lavender	0.8%-2.6%
Frankincense (<i>B. carterii</i>)	0.0%-2.1%
Petitgrain (Mandarin)	0.0%-2.3%
Spearmint (Piperitenone Oxide CT)	0.4%-2.0%
Spearmint (Piperitone Oxide CT)	0.4%-2.0%
Niaouli (Viridiflorol/ Para-cymene/1,8 -cineole CT)	0.1%-2.0%
Beta-Santalene	
Sandalwood (<i>S. album</i>)	0.9%-5.9%
Beta-Selinene	
Helichrysum (ssp. <i>microphyllum</i>)	6.6%-17.1%
Helichrysum (<i>H. italicum</i>)	2.0%-6.9%
Copaiba	0.5%-4.7%
Camphor (Linalool CT)	0.5%-2.9%
Beta-Sesquiphellandrene	
Ginger	1.9%-18.4%
Turmeric (Rhizome, Distilled)	0.0%-5.6%
Beta-Terpineol	
Spearmint (Linalool CT)	1.0%-3.0%
Beta-Thujone	
Sage (Beta-Thujone CT)	20.4%-49.7%
Sage (Camphor CT)	2.1%-28.6%
Sage (Alpha-Thujone CT)	3.5%-17.9%
Sage (1,8-Cineole CT)	0.1%-3.7%
Beta-Turmerone (Curlone)	
Turmeric (Rhizomes, Solvent Extracted)	18.1%-22.7%
Turmeric (Rhizomes, Distilled)	10.6%-18.5%
Beta-Vetivene	
Vetiver	0.0%-9.8%
Bicylogermacrene	
Pine	0.0%-6.2%
Ravintsara (Camphor CT)	0.0%-5.0%
Bisabolol Oxide A (Alpha-Bisabolol Oxide A)	
German Chamomile	3.1%-56.0%
Bisabolol Oxide B (Alpha-Bisabolol Oxide B)	
German Chamomile	3.9%-27.2%
Bisabolone Oxide A (Alpha-Bisabolone Oxide A)	
German Chamomile	0.5%-24.8%
Borneol	
Lavender (Brazilian)	22.4%
Rosemary (Borneol CT)	15.6%
Rosemary (Alpha-Pinene CT)	3.4%-13.7%
Rosemary (Camphor CT)	0.0%-11.6%
Lavandin (Giant)	7.6%-10.1%

Spike Lavender	0.9%-10.1%
Sage (Beta-Thujone CT)	1.1%-8.8%
Rosemary (Bornyl Acetate CT)	3.6%-8.4%
Spruce (Black)	0.0%-7.8%
Rosemary (Verbenone CT)	0.3%-7.3%
Sage (Camphor CT)	0.3%-6.2%
Lavandin (Dutch)	3.3%-6.0%
Ginger	0.0%-5.6%
Lavandin (Super)	1.3%-5.5%
Lavender (True English)	0.4%-5.1%
Rosemary (1,8-Cineole CT)	2.6%-4.8%
Oregano (<i>O. onites</i>)	0.5%-4.6%
Lavandin (Abrialis)	2.4%-3.7%
Lavandin (Grosso)	1.6%-3.6%
Sage (1,8-Cineole CT)	1.5%-2.4%
Oregano (Carvacrol CT)	0.9%-2.4%
Sage (Alpha-Thujone CT)	0.8%-2.3%

Bornyl Acetate

Spruce (Black)	21.6%-52.0%
Tsuga	26.8%-39.6%
Silver Fir (<i>A. alba</i>)	1.0%-30.3%
Blue Spruce	6.7%-29.4%
Rosemary (Bornyl Acetate CT)	14.3%-20.3%
White Fir (<i>A. concolor</i>)	0.6%-20.2%
Balsam Fir	4.9%-17.6%
Rosemary (Verbenone CT)	2.0%-17.0%
Cistus (<i>Viridiflorol-Trans-Pinocarveol CT</i>)	0.0%-16.7%
Rosemary (Alpha-Pinene CT)	0.0%-14.3%
Goldenrod	2.1%-9.2%
Rosemary (Borneol CT)	5.0%
Sage (Alpha-Thujone CT)	0.0%-4.5%
Orange (Cold-pressed/expressed)	0.0%-4.2%
Pine	0.1%-3.9%
Cistus (Alpha-Terpinene CT)	1.9%-3.7%
Rosemary (Camphor CT)	2.9%-3.0%
Frankincense (<i>B. frereana</i>)	0.0%-2.8%

Bulnesol (5-Azulenemethanol)

Palo Santo (Wood)	13.8%-18.0%
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Calarene (Beta-Gurjunene)

Spikenard (Calarene CT)	25.9%-35.4%
Vetiver	0.0%-9.8%

Camphene

Spruce (Black)	14.0%-22.0%
Silver Fir (<i>A. alba</i>)	5.6%-19.8%
Blue Spruce	7.1%-18.0%
Pine	0.4%-16.8%
Tsuga	11.9%-14.5%
Ginger	0.6%-12.7%
Camphor (Camphor CT)	0.2%-11.7%

Rosemary (Alpha-Pinene CT)	5.5%-11.5%
Rosemary (Camphor CT)	5.2%-11.2%
Rosemary (1,8-Cineole CT)	3.0%-11.1%
Spanish Sage	5.6%-11.0%
Cistus (Alpha-Pinene CT)	0.9%-10.0%
Sage (Beta-Thujone CT)	1.0%-9.9%
Balsam Fir	3.5%-9.7%
Sage (Camphor CT)	2.1%-9.7%
White Fir (<i>A. concolor</i>)	0.5%-9.0%
Bay Laurel	0.2%-8.9%
Sage (Alpha-Thujone CT)	4.8%-8.5%
Spanish Sage	5.2%-7.1%
Rosemary (Bornyl Acetate CT)	4.2%-7.0%
Rosemary (Beta-Myrcene CT)	1.3%-5.1%
Sage (1,8-Cineole CT)	0.2%-3.9%
Ravintsara (Camphor CT)	0.0%-2.8%
Frankincense (<i>B. carterii</i>)	0.0%-2.1%

Camphene Hydrate

White Fir (<i>A. concolor</i>)	0.1%-4.1%
Ravintsara (Linalool CT)	0.0%-1.5%

Camphor

Camphor (Camphor CT)	36.5%-98.0%
Ravintsara (Camphor CT)	40.5%-72.5%
Sage (Camphor CT)	19.8%-36.5%
Rosemary (Camphor CT)	14.9%-35.8%
Camphor (Linalool CT)	0.7%-33.5%
Spanish Sage	6.1%-31.0%
Sage (Beta-Thujone CT)	5.2%-29.5%
Blue Spruce	0.0%-26.4%
Sage (Alpha-thujone CT)	5.5%-26.1%
Sage (1,8-Cineole CT)	8.8%-25.0%
Spike Lavender	10.8%-23.2%
Rosemary (1,8-Cineole CT)	7.9%-18.9%
Rosemary (Alpha-Pinene CT)	2.4%-18.9%
Blue Tansy (Chamazulene CT)	4.0%-18.0%
Rosemary (Borneol CT)	15.3%
Rosemary (Verbenone CT)	2.9%-14.9%
Blue Tansy (Sabinene CT)	11.7%-13.2%
Lavandin (Dutch)	10.0%-12.5%
Lavandin (Abrialis)	8.2%-12.2%
Lavandin (Super)	0.0%-11.4%
Rosemary (Bornyl Acetate CT)	6.4%-10.4%
Rosemary (Beta-Myrcene CT)	2.1%-9.0%
Lavandin (Grosso)	5.9%-8.8%
Lavandin (Giant)	5.3%-8.4%
Lavender (Brazilian)	3.5%

Carhydranol

Spearmint (Piperitenone Oxide CT)	1.5%-2.0%
Spearmint (Piperitone Oxide CT)	0.2%-2.0%

Carotol	
Carrot Seed	38.9%-66.8%
Carvacrol	
Thyme (Carvacrol CT)	21.5%-84.1%
Oregano (Carvacrol CT)	48.5%-83.4%
Oregano (<i>O. onites</i>)	65.5%-79.4%
Oregano (<i>O. syriacum</i> , Carvacrol CT)	47.1%-57.7%
Oregano (<i>O. syriacum</i> , Thymol CT)	3.4 ⁰ / [^] 33.8%
Thyme (Thymol CT)	0.8%-26.8%
Thyme (Thuyanol-4 CT)	0.0%-21.4%
Fennel (Trans-Anethole CT)	0.0%-12.6%
Oregano (Terpinen-4-ol CT)	4.7%-9.4%
Thyme (Geraniol CT)	0.0%-6.9%
Thyme (Linalool CT)	0.0%-6.8%
Thyme (Alpha-Terpineol CT)	0.0%-3.0%
Carvone	
Spearmint (Carvone CT)	48.6%-76.5%
Petitgrain (Bergamot)	0.0%-5.8%
Caryophyllene	
Lavender (True English)	0.0%-24.1%
Rosemary (Bornyl Acetate CT)	0.0%-13.6%
Rosemary (Beta-Myrcene CT)	0.0%-8.3%
Patchouli (Chinese)	0.5%-6.8%
Rosemary (1,8-Cineole CT)	0.1%-4.2%
Spearmint (Menthone CT)	2.9%
Ravintsara (Camphor CT)	0.0%-2.2%
Caryophyllene Oxide	
Melissa	1.3%-31.7%
Pine	0.0%-12.6%
Copaiba	0.3%-10.2%
Lemongrass (East Indian)	1.3%-7.2%
Black Pepper	0.1%-7.2%
Lemon Verbena (Stems)	1.3%-5.1%
Lemon Verbena (Leaves and stems)	3.1%-4.9%
Oregano (Carvacrol CT)	0.0%-4.9%
Lavender (Brazilian)	4.5%
Carrot Seed	0.0%-4.3%
Spearmint (Pulegone-Menthone-Isomenthone CT)	0.0%-3.0%
Lemon Verbena (Leaves)	0.8%-2.5%
Cedrol	
Cedarwood (Virginian, Wood)	4.0%-38.8%
Chamazulene	
German Chamomile	0.7%-61.3%
Blue Tansy (Chamazulene CT)	17.0%-38.0%
Blue Cypress	0.0%-5.6%
Blue Tansy (Sabinene CT)	2.8%-5.0%

Cinnamyl Acetate	
Cassia (Leaves)	0.0%-9.2%
Cinnamon Bark	0.1%-8.8%
Cassia (Bark)	0.0%-4.2%
Ylang Ylang (French IV)	1.6%
Cis-2-Methoxy Cinnamic Acid	
Cassia (Bark)	0.0%-43.1%
Cis-Anethole	
Fennel (Trans-Anethole CT)	0.1%-8.6%
Cis-Alpha-Atlantone (Turmerone)	
Cedarwood (Atlas)	0.2%-29.5%
Cis-Carveol	
Spearmint (Carvone CT)	14.0%-21.3%
Cis-Enyne-Bicycloether	
German Chamomile	8.8%-26.1%
Cis-Linalool Oxide	
Petitgrain (Bergamot)	0.0%-8.1%
Cis-Ocimenone	
Spearmint (Cis-Ocimenone CT)	61.7%
Cis-Sabinene Hydrate	
<i>See Thuyanol-4</i>	
Citral (Geranial + Neral)	
Lemongrass (East Indian)	< 98%
Lemongrass (West Indian)	< 82.7%
Melissa	< 79.0%
Lemon Verbena (Stems)	< 67.0%
Lemon Verbena (Leaves)	< 65.9%
Lime (Distilled)	< 47.4%
Tangerine (Distilled)	< 33.5%
Citronella	< 14.1%
Lemon (Distilled)	< 5.4%
Citronellal	
Citronella	26.5%-42.8%
Melissa	0.4%-20.3%
Citronellol	
Rose (Iranian)	12.6%-53.4%
Geranium	2.4%-45.7%
Rose (Turkish)	24.5%-43.0%
Citronella	5.2%-11.5%
Melissa	0.1%-7.7%
Citronellol + Nerol	
Rose (Indian)	2.2%-44.9%
Rose (Bulgarian)	21.6%-31.9%

Citronellyl Acetate	
Melissa	0.0%-3.7%
Citronellyl Formate	
Geranium	0.0%-18.1%
Rose (Iranian)	0.0%-14.6%
Copalic Acid	
Copaiba	2.1%-7.6%
Cubanol	
Pine	0.0%-5.1%
Cuparene	
Cedarwood (Virginian, Wood)	0.0%-6.3%
Curzerene	
Myrrh	8.5%-40.1%
Cyclohexanone	
Geranium	0.0%-5.2%
Cycloisolongifolene	
Vetiver	0.0%-5.9%
Daniellic Acid	
Copaiba	2.6%-33.7%
Daucene	
Carrot Seed	0.0%-8.7%
Daucol	
Carrot Seed	2.0%-12.6%
Decanoic Acid	
German Chamomile	0.1%-5.1%
Dehydro-Aromadendrene	
Vetiver	0.0%-7.3%
Delta-Amorphene	
Copaiba	0.0%-5.4%
Delta-3-Carene (3-Carene)	
Pine	0.1%-33.7%
Black Pepper	1.7%-32.6%
Balsam Fir	0.0%-27.7%
Cypress	11.1%-22.7%
Silver Fir (<i>A. alba</i>)	0.0%-13.9%
Galbanum	0.6%-12.1%
Blue Spruce	0.0%-6.4%
Melissa	0.0%-5.0%
Delta-Cadine ne	
Pine	0.0%-11.6%

Ylang Ylang (Solvent Extracted)	5.4%-7.6%
Galbanum	1.5%-7.2%
Ylang Ylang (Madagascan II)	2.1%-5.2%
Vetiver	0.0%-4.0%
Frankincense (<i>B. carterii</i>)	0.0%-2.6%
Spearmint (Piperitone Oxide CT)	0.1%-1.9%
Spearmint (Piperitenone Oxide CT)	0.1%-1.6%
Delta-Terpene ol	
Spanish Sage	0.3%-12.0%
Dihydro-Occidentalol	
Helichrysum (ssp. <i>microphyllum</i>)	7.6%-12.2%
Dihydrocarvone	
Spearmint (Carvone CT)	0.0%-21.5%
Dihydrocolumellarin	
Blue Cypress (Wood)	1.3%-14.0%
Dihydrolinalool	
Rose (Iranian)	0.0%-39.2%
Dihydro-Beta-Ionene	
Spikenard (Nardol CT)	7.9%
Dimethyl Anthranilate	
Petitgrain (Mandarin)	13.2%-65.3%
Disiloxane	
Rose (Iranian)	0.0%-17.6%
Docosane	
Rose (Iranian)	0.0%-19.5%
Dodecanal (2E-Dodecanal)	
Coriander	0.1%-8.1%
(E)-Alpha-Bisabolene	
Spike Lavender	0.2%-2.3%
(E)-Beta-Farnesol	
German Chamomile	0.0%-5.2%
(E)-Cadinene	
Ylang Ylang (Madagascan II)	> 5.8%
Ylang Ylang (Madagascan III)	> 5.8%
(E)-Cinnamaldehyde (Trans-Cinnamaldehyde)	
Cassia (Bark)	24.6%-92.3%
Cinnamon Bark	50.5%-91.0%
Cassia (Leaves)	57.9%-78.4%
(E)-Cinnamic Acid	
Cassia (Bark)	0.0%-5.0%

(E)-Isovalencenol

Vetiver 0.0%-15.6%

(E,E)-Farnesol

Sandalwood (*S. spicatum*) 9.3%-38.7%

Niaouli (Viridiflorol/ Para-cymene/1,8 -cineole CT) 0.0%-10.8%

Niaouli (Viridiflorol CT) 0.0%-10.0%

Neroli 0.0%-8.0%

German Chamomile 0.0%-6.9%

Niaouli (1,8-Cineole CT) 0.0%-5.0%

(E,E)-Farnesyl Acetate ((2E,6E)-Farnesyl Acetate)

Ylang Ylang (French IV) 2.1%

Ylang Ylang (Madagascan I) 0.5%-7.8%

Ylang Ylang (Madagascan II) 0.7%-6.2%

Eicosane

Rose (Iranian) 0.7%-20.5%

Rose (Indian) 0.1%-5.0%

Elemicin

Nutmeg (East Indian) 0.6%-30.9%

Nutmeg (West Indian) 0.4%-6.1%

Ravensara (Methyl Eugenol CT) 0.6%-1.7%

Elemol

Citronella 2.0%-14.5%

Black Pepper 0.0%-8.0%

Epi-Alpha-Cadinol

Spikenard (Valeranone CT) 22.7%

Basil (Linalool CT) 3.4%-13.1%

Epi-Alpha-Muurolol (T-Muurolol)

Lavender (Brazilian) 13.4%

Ylang Ylang (French IV) 4.4%

Epi-Bicyclosesquiphellandrene

Galbanum 0.0%-4.4%

Epimanoyl oxide (1H-naphtho (2,1,b) pyran)

Clary Sage 0.0%-8.6%

Ethanol

Rose (Turkish) 0.0%-13.4%

Rose (Bulgarian) 0.0%-0.9%

Eudesmen-5-en-11-ol

Helichrysum (ssp. *microphyllum*) 3.7%-23.5%

Helichrysum (ssp. *italicum*) 1.1%-5.8%

Eugenol

Clove Bud 69.8%-87.0%

Black Pepper 0.1%-41.0%

Basil (Linalool CT)	4.7%-11.2%
Cinnamon Bark	1.9%-10.0%
Cassia (Leaves)	0.0%-4.5%
Camphor (Linalool CT)	0.0%-3.6%
Rose (Indian)	0.0%-3.3%
Ravensara (Methyl Eugenol CT)	0.0%-0.6%

Eugenyl Acetate

Clove Bud	5.0%-21.3%
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(E,Z)-Farnesol ((2Z,6Z)-Farnesol), Farnesol

Rose (Indian)	0.3%-5.4%
Palmarosa	1.6%-3.4%
Ylang Ylang (French IV)	1.4%

Fenchone

Fennel (Trans Anethole CT)	1.0%-34.7%
Fennel (Methyl Chavicol CT)	1.0%-10.4%

Formic Acid

Spikenard (Nardol CT)	9.4%
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Furanoeudesma-1,3-Diene (Furanoeudsmadiene)

Myrrh	15.0%-49.1%
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Furanodiene

Myrrh	0.0%-19.7%
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Gamma-Atlantone

Cedarwood (Himalayan, Wood)	6.0%-8.6%
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Gamma-Cadinene

Pine	0.0%-11.1%
Ylang Ylang (French IV)	2.1%
Ylang Ylang (Madagascan III)	< 17.4%
Ylang Ylang (Madagascan II)	< 12.7%
Copaiba	0.8%-4.6%

Gamma-Curcumene

Helichrysum (<i>H. italicum</i>)	2.3%-22.5%
Helichrysum (ssp. <i>microphyllum</i>)	0.8%-18.2%
Helichrysum (ssp. <i>italicum</i>)	0.8%-12.9%

Gamma-Elementene

Juniper Berry	0.1%-6.4%
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Gamma-Eudesmol (10-Epi-Gamma-Eudesmol)

Blue Cypress (Wood)	8.0%-9.7%
Geranium	0.0%-5.6%

Gamma-Himachalene

Cedarwood (Himalayan, Wood)	7.0%-12.6%
Cedarwood (Atlas)	5.1%-11.0%

Gamma-Terpene

Petitgrain (Mandarin)	19.8%-47.9%
Niaouli (Viridiflorol/ Para-cymene/1,8-cineole CT)	0.0%-32.4%
Melaleuca (Tea Tree)	10.0%-28.0%
Thyme (Carvacrol CT)	0.0%-26.8%
Thyme(Thymol CT)	0.0%-23.5%
Lime (Cold-pressed/expressed)	0.1%-20.6%
Lemon (Cold-pressed/expressed)	0.1%-18.0%
Lime (Distilled)	0.1%-16.5%
Marjoram	6.9%-14.3%
Lemon (Distilled)	0.1%-14.1%
Coriander	4.6%-13.6%
Bergamot (Cold-pressed/expressed)	4.3%-11.4%
Lemon (Distilled)	9.8%-10.4%
Bergamot (Distilled)	0.1%-10.3%
Oregano (<i>O. syriacum</i> , Thymol CT)	6.5%-8.0%
Petitgrain (Bergamot)	0.0%-7.0%
Oregano (Carvacrol CT)	0.0%-6.3%
Ravensara (Alpha-Terpinene CT)	5.7%-5.9%
Tangerine (Cold-pressed/expressed)	0.1%-5.4%
Basil (Linalool CT)	0.0%-5.4%
Thyme (Geraniol CT)	0.0%-5.3%
Oregano (<i>O. onites</i>)	1.7%-5.2%
Nutmeg (East Indian)	0.1%-5.2%
Oregano (Terpinen-4-ol CT)	0.0%-5.0%
Thyme (Thuyanol-4 CT)	0.0%-5.0%
Oregano (<i>O. syriacum</i> , Carvacrol CT)	3.4%-4.8%
Nutmeg (West Indian)	1.7%-4.7%
Ravensara (Sabinene CT)	1.9%-4.4%
Ravensara (Limonene CT)	1.8%-4.1%
Thyme (Alpha-Terpineol CT)	0.0%-3.0%
Niaouli (1,8-Cineole/Viridiflorol CT)	0.1%-2.0%
Ravensara (Methyl Eugenol CT)	0.7%-1.6%

Gamma-Terpineol

Palo Santo (Wood)	0.0%-8.7%%
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Gamma-Seline ne

Vetiver	0.0%-4.1%
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Geranial (E-Citral, Citral A)

Lemongrass (East Indian)	25.0%-53.0%
Lemongrass (West Indian)	27.0%-48.1%
Melissa	6.6%-45.2%
Lemon Verbena (Stems)	29.5%-39.6%
Lemon Verbena (Leaves)	29.5%-38.5%
Lemon Verbena (Leaves and stems)	9.9%-26.0%
Ginger	1.2%-20.1%
Tangerine (Distilled)	0.1%-19.0%
Rose (Iranian)	0.0%-12.3%
Citronella	1.5%-8.1%
Lime (Cold-pressed/expressed)	0.0%-6.1%
Palmarosa	0.0%-2.1%

Geraniol	
Palmarosa	63.5%-83.8%
Thyme (Geraniol CT)	23.5%-72.7%
Citronella	16.2%-40.1%
Geranium	1.1%-38.4%
Thyme (Linalool CT)	0.0%-30.0%
Rose (Indian)	2.5%-26.5%
Rose (Bulgarian)	4.8%-25.3%
Rose (Iranian)	0.0%-22.7%
Rose (Turkish)	2.1%-18.0%
Ginger	0.0%-14.5%
Melissa	0.1%-11.8%
Thyme (Carvacrol CT)	0.0%-10.3%
Thyme (Thymol CT)	0.0%-8.9%
Lemon Verbena (Leaves and stems)	0.1%-6.0%
Neroli	0.4%-4.3%
Lemon Verbena (Leaves)	0.0%-4.0%
Tangerine (Distilled)	0.0%-3.5%

Geranyl Acetate	
Ginger	0.0%-18.8%
Palmarosa	2.3%-14.8%
Ylang Ylang Complete	7.6%-12.6%
Clary Sage	3.8%-12.1%
Ylang Ylang (Madagascan I)	6.2%-11.0%
Petitgrain (Bergamot)	0.0%-8.7%
Ylang Ylang (Madagascan II)	2.6%-7.2%
Melissa	0.1%-7.1%
Neroli	2.6%-4.9%
Spanish Sage	0.0%-4.9%
Rose (Indian)	0.1%-4.1%
Citronella	1.8%-4.0%
Lemon Verbena (Leaves)	0.9%-4.0%
Tangerine (Distilled)	0.0%-3.9%

Germacrene	
Ylang Ylang (Solvent Extracted)	10.3%-12.0%

Germacrene A	
Palo Santo (Leaves, Aerial Parts)	0.0%-3.9%

Germacrene B	
Citronella	0.0%-6.8%
Myrrh	0.9%-4.3%

Germacrene D	
Goldenrod	28.4%-69.7%
Ylang Ylang (Madagascan II)	15.1%-25.1%
Ylang Ylang Complete	18.8%-24.4%
Ylang Ylang (Madagascan I)	0.1%-13.5%
Clary Sage	1.3%-13.3%
Black Pepper	0.0%-11.0%

Juniper Berry	1.1%-9.6%
Melissa	0.1%-8.3%
Juniper (Needles)	3.0%-7.8%
Spearmint (Piperitone Oxide CT)	2.0%-7.5%
Spearmint (Piperitenone Oxide CT)	4.2%-7.2%
Pine	0.2%-6.5%
Spearmint (Pulegone-Menthone-Isomenthone CT)	0.0%-5.3%
Lavender (True English)	0.2%-4.7%
Spearmint (Carvone CT)	0.0%-4.7%
Copaiba	1.2%-4.6%
Basil (Linalool CT)	0.8%-3.3%
Spearmint (Linalool CT)	1.9%-3.0%
Ravensara (Sabinene CT)	1.5%-2.2%
Palo Santo (Wood)	0.0%-2.1%
Ravensara (Methyl Chavicol CT)	0.1%-1.6%
Ravensara (Alpha-Terpinene CT)	0.5%-1.1%
Germacrene D-4-ol	
Juniper Berry	0.0%-4.4%
Germacrene Isomer	
Myrrh	0.4%-6.5%
Germacrone	
Myrrh	0.0%-5.8%
Globulol	
Cistus (<i>Viridiflorol-Trans-Pinocarveol CT</i>)	0.0%-5.0%%
Spikenard (Ledene Oxide CT)	1.9%
Guaiazulene	
Blue Cypress	0.1%-6.2%
Guaiadiene (Guaia-6,9-Diene)	
Geranium	0.0%-5.4%
Guaiol	
Blue Cypress (Wood)	13.7%-15.3%
Hardwickiic Acid	
Copaiba	0.0%-9.0%
Hedycaryol	
Black Pepper	0.0%-9.1%
Heneicosane	
Rose (Indian)	0.0%-19.7%
Rose (Iranian)	0.0%-18.0%
Rose (Turkish)	2.9%-8.9%
Rose (Bulgarian)	1.1%-8.6%
Heptadecane	
Rose (Indian)	0.5%-6.0%
Rose (Bulgarian)	2.7%-5.1%
Rose (Turkish)	0.2%-0.5%

Hexadecanol	
Rose (Iranian)	0.0%-7.8%
Himachalol	
Cedarwood (Atlas)	5.3%-66.2%
Cedarwood (Himalayan, Wood)	12.1%-18.2%
Hydroxy-Copalic Acid	
Copaiba	1.2%-5.1%
Incesole Acetate	
Frankincense (<i>B. carterii</i>)	0.0%-2.3%
Isoamyl Angelate	
Chamomile (Roman)	3.7%-17.9%
Isoamyl 2-Methylbutyrate	
Chamomile (Roman)	3.9%-4.5%
Isoamyl Isobutyrate	
Chamomile (Roman)	5.3%-23.7%
Isoamyl Tiglate	
Chamomile (Roman)	11.7%-19.9%
Isobutyl Angelate	
Chamomile (Roman)	24.5%-36.0%
Isobutyl Isobutyrate	
Chamomile (Roman)	1.4%-5.3%
Isogermacrene-D	
Ylang Ylang (French IV)	1.8%
Isolene	
Ravensara (Alpha-Terpinene CT)	0.0%-14.2%
Isomenthone	
Spearmint (Pulegone-Menthone-Isomenthone CT)	2.6%-31.4%
Geranium	0.0%-7.9%
Peppermint	0.0%-5.3%
Spearmint (Menthone CT)	2.6%
Isopropyl Hexadecanoate	
German Chamomile	0.0%-12.7%
Isovaleraldehyde	
Niaouli (1,8-Cineole/Viridiflorol CT)	0.0%-32.4%
Melaleuca (Tea Tree)	18.6%-28.0%
Thyme (Carvacrol CT)	0.0%-26.8%
Thyme (Thymol CT)	0.0%-23.5%
Lime (Cold-pressed/expressed)	0.1%-20.6%
Lemon (Cold-pressed/expressed)	1.0%-18.0%
Lime (Distilled)	0.0%-16.5%
Marjoram	6.9%-14.3%

Lemon (Distilled)	0.1%-14.1%
Coriander	4.6%-13.6%
Bay Laurel	0.0%-10.5%
Italicene	
Helichrysum (<i>H. italicum</i>)	0.0%-7.1%
Helichrysum (ssp. <i>microphyllum</i>)	1.4%-5.1%
Italidione	
Helichrysum (<i>H. italicum</i>)	0.0%-5.1%
Kaurenoic Acid	
Copaiba	0.0%-10.1%
Khusimol (Zizanol)	
Vetiver	3.4%-24.6%
Lavandulol	
Lavender (French)	0.0%-4.3%
Lavandulyl Acetate (Lavandulol Acetate)	
Lavender (True English)	2.7%-6.4%
Lavender (Polish)	4.5%-5.7%
Lavender (Indian)	0.6%-4.5%
Lavender (Bulgarian)	2.5%-4.4%
Lavandin (Grosso)	1.6%-2.9%
Ledene Oxide	
Spikenard (Ledene Oxide CT)	13.0%
Ledol	
Cistus (Alpha-Pinene CT)	0.0%-13.8%
Spanish Sage	0.0%-10.8%
Cistus (<i>Viridiflorol-Trans-Pinocarveol CT</i>)	0.4%-6.6%
Limonene (D-Limonene)	
Lemon (Cold-pressed/expressed)	38.1%-95.8%
Orange (Cold-pressed/expressed)	85.4%-95.4%
Grapefruit (Cold-pressed/expressed)	86.3%-95.3%
Tangerine (Cold-pressed/expressed)	87.1%-94.7%
Lime (Cold-pressed/expressed)	39.9%-94.4%
Orange (Distilled)	81.5%-93.7%
Tangerine (Distilled)	45.7%-92.4%
Grapefruit (Distilled)	70.9%-88.6%
Lemon (Distilled)	61.8%-73.8%
Palo Santo (Wood)	60.7%-68.7%
Bergamot (Distilled)	31.7%-59.2%
Blue Cypress (Leaves)	35.9%-55.6%
Silver Fir (<i>A. alba</i>)	7.5%-54.7%
Juniper (Needles)	2.8%-53.9%
Lime (Distilled)	49.7%-53.8%
Bergamot (Cold-pressed/expressed)	10.5%-53.2%
Black Pepper	2.9%-38.4%

Frankincense (<i>B. sacra</i>)	5.6%-33.5%
Palo Santo (Leaves, Aerial Parts)	26.5%-30.7%
Neroli	9.2%-27.5%
Spearmint (Carvone CT)	5.8%-25.2%
Blue Spruce	0.0%-24.8%
Myrtle	6.7%-24.1%
White Fir (<i>A. Concolor</i>)	1.6%-23.0%
Ravensara (Limonene CT)	13.9%-22.5%
Fennel (Methyl Chavicol CT)	0.1%-22.4%
Ravensara (Alpha-Terpinene CT)	14.8%-21.8%
Frankincense (<i>B. carterii</i>)	1.0%-20.4%
Lemon Verbena (Leaves and stems)	3.7%-18.6%
Cedarwood (Himalayan, Needles)	17.0%
Fennel (Trans-Anethole CT)	0.3%-16.5%
Lemon Verbena (Leaves)	5.6%-15.9%
Balsam Fir	1.8%-15.6%
Niaouli (1,8-Cineole CT)	0.5%-15.0%
Helichrysum (ssp. <i>italicum</i>)	0.2%-12.8%
Petitgrain (Mandarin)	0.0%-12.6%
Goldenrod	0.2%-12.5%
Peppermint	0.2%-10.8%
Rosemary (Beta-Myrcene CT)	2.9%-10.6%
Spanish Sage	0.0%-10.4%
Eucalyptus (Globulus)	0.4%-10.1%
Niaouli (Viridiflorol CT)	1.0%-10.0%
Camphor (Camphor CT)	0.0%-9.0%
Cajeput (Cajuput)	4.5%-8.9%
Ravensara (Sabinene CT)	7.2%-8.5%
Rosemary (Verbenone CT)	0.0%-7.1%
Nutmeg (East Indian)	2.0%-7.0%
Sage (Beta-Thujone CT)	1.3%-6.5%
Tsuga	3.4%-6.2%
Sage (Camphor CT)	0.8%-6.2%
Niaouli (Viridiflorol/ Para-cymene/1,8-cineole CT)	1.0%-6.0%
Spruce (Black)	2.6%-5.5%
Lemon Verbena (Stems)	3.2%-5.4%
Cypress	2.0%-5.4%
Spearmint (Pulegone-Menthone-Isomenthone CT)	0.7%-5.2%
Juniper Berry	2.9%-5.1%
Spearmint (Piperitone Oxide CT)	0.4%-4.8%
Turmeric (Leaves)	0.0%-4.6%
Rosemary (Bornyl Acetate CT)	0.1%-4.6%
Ravensara (Methyl Eugenol CT)	0.7%-4.5%
Eucalyptus (Radiata)	0.5%-4.5%
Ravintsara (Camphor CT)	0.0%-4.5%
Nutmeg (West Indian)	2.9%-4.4%
Ravensara (Methyl Chavicol CT)	0.1%-4.2%
Coriander	0.1%-4.0%
Rosemary (Camphor CT)	2.8%-3.1%
Sage (Alpha-Thujone CT)	1.1%-2.4%
Frankincense (<i>B. frereana</i>)	0.0%-2.4%
Spearmint (Piperitenone Oxide CT)	1.1%-1.8%

Spearmint (Cis-Ocimenone CT)	1.5%
Ravensara (1,8-Cineole CT)	0.0%-0.8%
Linalool (Linalol)	
Ravintsara (Linalool CT)	87.2%-95.3%
Thyme (Linalool CT)	32.2%-93.8%
Camphor (Linalool CT)	40.3%-87.3%
Coriander	51.0%-79.9%
Spearmint (Linalool CT)	65.2%-75.3%
Basil (Linalool CT)	45.3%-69.3%
Lavender (French)	9.3%-68.8%
Petitgrain (Bergamot)	18.6%-66.0%
Lavender (True English)	24.5%-50.6%
Lavender (Bulgarian)	25.4%-47.3%
Lavandin (Dutch)	42.5%-47.0%
Lavender (Munstead)	37.8%-46.1%
Lavandin (Giant)	34.9%-45.7%
Lavender (Italian)	33.3%-45.0%
Spike Lavender	27.2%-43.1%
Lavandin (Super)	23.0%-41.8%
Thyme (Geraniol CT)	0.4%-40.8%
Lavandin (Abrialis)	19.6%-39.6%
Clary Sage	12.8%-38.6%
Lavender (Indian)	26.7%-37.1%
Lavandin (Grosso)	25.7%-35.5%
Lavender (Polish)	27.3%-34.7%
Neroli	26.6%-34.4%
Thyme (Thuyanol CT)	2.4%-32.5%
Bergamot (Distilled)	9.5%-31.8%
Niaouli ((E)-Nerolidol CT)	0.0%-30.0%
Ylang Ylang (I Madagascan)	11.7%-30.0%
Thyme (Carvacrol CT)	1.1%-29.9%
Cedarwood (Himalayan, Needles)	24.5%
Ravintsara (Camphor CT)	0.5%-22.9%
Camphor (Camphor CT)	0.6%-22.3%
Ravensara (Sabinene CT)	6.5%-21.4%
Bergamot (Cold-pressed/expressed)	1.8%-20.3%
Thyme (Alpha-pinene CT)	0.4%-19.2%
Bay Laurel	0.4%-17.7%
Myrtle	13.3%-17.6
Geranium	0.3%-16.0%
Oregano (<i>Terpinen-4-ol CT</i>)	2.1%-15.2%
Helichrysum (ssp microphyllum)	0.0%-14.9%
Thyme (Thymol CT)	1.1%-13.4%
Ylang Ylang (II Madagascan)	3.9%-12.2%
Spearmint (Carvone CT)	0.3%-11.3%
Ylang Ylang (Complete)	1.3%-10.6%
Cardamom (Alpha-Terpinyl Acetate CT)	0.0%-10.2%
Petitgrain (Mandarin)	0.0%-9.6%
Ylang Ylang (I French)	9.0%
Nutmeg (East Indian)	0.2%-7.4%

Rosemary (Verbenone CT)	1.0%-6.6%
Cardamom (1,8-Cineole CT)	0.6%-6.4%
Cinnamon Bark	0.0%-6.3%
Ravensara (Limonene CT)	3.0%-5.7%
Ginger	0.0%-4.8%
Ravensara (Methyl Eugenol CT)	0.4%-4.7%
Ravensara (Alpha-Terpinene CT)	3.3%-4.5%
Rosemary (Camphor CT)	0.0%-3.1%
Palmarosa	0.8%-2.6%
Ravensara (Methyl Chavicol CT)	0.7%-1.9%
Orange (Distilled)	0.1%-1.4%

Linalyl Acetate

Clary Sage	16.9%-60.8%
Lavender (French)	1.2%-59.4%
Petitgrain (Bergamot)	12.4%-50.0%
Lavender (Indian)	35.4%-47.6%
Lavandin (Super)	20.4%-45.0%
Lavender (True English)	3.7%-45.0%
Lavender (Italian)	31.7%-41.2%
Bergamot (Cold-pressed/expressed)	15.6%-40.5%
Lavender (Bulgarian)	19.9%-37.6%
Lavandin (Grosso)	26.2%-36.7%
Lavandin (Abrialis)	18.6%-28.0%
Marjoram	3.8%-26.1%
Lavender (Polish)	19.7%-22.4%
Bergamot (Distilled)	10.7%-16.8%
Basil (Linalool CT)	0.0%-16.0%
Lavender (Munstead)	6.1%-12.2%
Lavandin (Dutch)	4.5%-11.7%
Neroli	3.3%-11.3%
Spanish Sage	0.0%-4.2%

Linalyl Formate

Rose (Iranian)	0.0%-11.9%
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Lindestrene

Myrrh	12.0%-12.9%
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Menthofuran

Palo Santo (Wood)	0.0%-13.4%
Peppermint	0.1%-11.2%
Palo Santo (Leaves, Aerial Parts)	0.0%-5.1%

Menthol

Peppermint	25.2%-76.7%
Spearmint (Menthone CT)	5.4%

Menthone

Spearmint (Menthone CT)	44.5%
Spearmint (Pulegone-Menthone-Isomenthone CT)	15.6%-31.4%
Peppermint	2.5%-30.6%
Spearmint (Carvone CT)	0.9%-21.9%

Geranium	0.0%-16.0%
Menthyl Acetate	
Peppermint	0.4%-17.4%
Methyl Benzoate	
Ylang Ylang (French I)	6.1%
Ylang Ylang (Madagascan I)	1.5%-5.6%
Methyl Caprylate	
Ylang Ylang (French IV)	7.2%
Methyl Chavicol (Estragole)	
Fennel (Methyl Chavicol CT)	61.6%-94.5%
Ravensara (Methyl Chavicol CT)	61.6%-90.0%
Ravensara (Limonene CT)	0.1%-11.9%
Fennel (Trans Anethole CT)	2.6%-8.2%
Ravensara (Sabinene CT)	1.8%-5.0%
Ravensara (Methyl Eugenol CT)	2.5%-4.5%
Ravensara (Alpha-Terpinene CT)	0.1%-1.4%
Ravensara (1,8-Cineole CT)	0.0%-0.7%
Methyl Eugenol (Eugenyl Methyl Ether)	
Ravensara (Methyl Chavicol CT)	74.0%-81.6%
Bay Laurel	0.1%-15.8%
Ravensara (Methyl Eugenol CT)	0.1%-8.5%
Ravensara (Limonene CT)	0.0%-5.2%
Ravensara (Sabinene CT)	0.3%-1.3%
Ravensara (Alpha-Terpinene CT)	0.1%-1.1%
Methyl Heptenone (6-Methyl-5-Hepten-2-one)	
Lemon Verbena (Leaves and stems)	1.4%-7.4%
Lemon Verbena (Leaves)	0.3%-4.0%
Methyl Isoeugenol	
Cinnamon Bark	0.0%-7.8%
Methyl Salicylate	
Wintergreen	96.9%-99.6%
Birch	97.0%-99.0%
Ylang Ylang (Madagascan I)	1.7%-10.4%
Ylang Ylang (Madagascan II)	0.6%-5.3%
Myrcene (Beta-Myrcene)	
Rosemary (Beta-Myrcene CT)	17.9%-30.0%
Lemongrass (West Indian)	3.2%-27.0%
Juniper Berry	2.9%-26.5%
Blue Tansy (Chamazulene CT)	1.0%-18.4%
Blue Tansy (Sabinene CT)	4.4%-18.4%
Blue Cypress (Leaves)	6.0%-10.1%
Spanish Sage	0.1%-10.0%
Frankincense (<i>B. sacra</i>)	1.0%-8.9%
Blue Spruce	5.1%-7.5%

Ravensara (Limonene CT)	5.0%-7.3%
Grapefruit (Distilled)	3.5%-7.3%
Juniper (Needles)	6.5%-6.9%
Grapefruit (Cold-pressed/expressed)	1.6%-6.3%
Spearmint (Linalool CT)	4.7%-5.9%
Rosemary (Verbenone CT)	0.5%-5.4%
Rosemary (Camphor CT)	2.3%-4.9%
Rosemary (Alpha-Pinene CT)	0.6%-4.9%
Ravensara (Sabinene CT)	2.5%-3.4%
Pine	0.2%-3.4%
Ravensara (Alpha-Terpinene CT)	2.8%-3.2%
Petitgrain (Mandarin)	0.0%-3.2%
Orange (Cold-pressed/expressed)	0.7%-2.4%
Tangerine (Cold-pressed/expressed)	0.7%-2.2%
Orange (Distilled)	0.9%-2.1%
Myrcenol-8	
Thyme (Thuyanol-4 CT)	0.0%-18.7%
Thyme (Thuyanol-4 CT)	0.0%-7.1%
Myristicin	
Nutmeg (East Indian)	0.3%-45.6%
Myrtenyl Acetate	
Myrtle	5.4%-21.6%
Naphthale ne	
Lavender (True English)	0.0%-4.2%
Naphthale nol	
White Fir (<i>A. concolor</i>)	0.0%-6.4%
Nardol	
Spikenard (Nardol CT)	10.1%
Neo-isodihydrocarveol Acetate	
Spearmint (Cis-Ocimenone CT)	1.5%
Neoisomenthyl Acetate	
Spearmint (Menthone CT)	8.4%
Neral (Z-Citral, Citral B)	
Lemongrass (East Indian)	20.0%-45.0%
Rose (Iranian)	0.0%-44.8%
Lemongrass (West Indian)	19.3%-34.6%
Melissa	4.6%-33.8%
Lemon Verbena (Leaves)	25.7%-27.4%
Lemon Verbena (Stems)	23.0%-27.4%
Lemon Verbena (Leaves and stems)	6.0%-12.0%
Tangerine	0.1%-14.5%
Ginger	2.6%-9.4%
Citronella	0.3%-6.0%

Nerol

Helichrysum (ssp. <i>microphyllum</i>)	3.7%-14.4%
Helichrysum (ssp. <i>italicum</i>)	1.4%-12.8%
Melissa	0.0%-7.9%
Rose (Turkish)	0.8%-7.6%
Cardamom (Alpha-Terpinyl Acetate CT)	0.0%-6.8%
Lemon Verbena (Leaves)	0.0%-5.2%
Lemongrass (West Indian)	3.1%-3.7%
Lemongrass (East Indian)	0.0%-2.9%
Nerolidol ((E)-Nerolidol)	
Niaouli ((E)-Nerolidol CT)	56.0%-95.0%
Neroli	1.8%-17.5%
Cardamom (Alpha-Terpinyl Acetate CT)	0.3%-8.9%
Niaouli (Viridiflorol CT)	0.1%-8.3%
Niaouli (1,8-Cineole/Viridiflorol CT)	0.1%-2.3%
Neryl Acetate	
Helichrysum (ssp. <i>microphyllum</i>)	16.9%-56.1%
Helichrysum (ssp. <i>italicum</i>)	5.6%-45.9%
Coriander	0.0%-14.2%
Helichrysum (<i>H. italicum</i>)	1.4%-11.5%
Petitgrain (Bergamot)	2.2%-4.5%
Lavender (Munstead)	0.7%-4.4%
Lemon Verbena (Leaves)	0.0%-4.0%
Ylang Ylang (French I)	2.7%
Neryl Propionate	
Helichrysum (ssp. <i>italicum</i>)	3.0%-16.4%
Helichrysum (ssp. <i>microphyllum</i>)	1.5%-16.4%
Nonadecane	
Rose (Iranian)	0.0%-51.2%
Rose (Indian)	7.3%-24.7%
Rose (Bulgarian)	8.1%-19.2%
Rose (Turkish)	8.2%-18.9%
Nootkatone	
Grapefruit (Distilled)	0.0%-8.3%
Vetiver	0.0%-4.1%
Occidentalol Acetate	
Rose (Iranian)	0.0%-44.8%
Octadecane	
Rose (Iranian)	0.0%-6.1%
Octadecanol	
Spearmint (Pulegone-Menthone-Isomenthone CT)	0.0%-15.0%
Octanol	
Tangerine (Distilled)	0.0%-6.9%
Octyl Acetate	
Frankincense (<i>B. carterii</i>)	0.0%-39.3%

Para-Cresyl Methyl Ether

Ylang Ylang (French I)	9.7%
Ylang Ylang (French IV)	1.6%
Ylang Ylang (Madagascan I)	1.1%-10.4%
Ylang Ylang (Madagascan II)	0.6%-5.3%

Para-Cymene (Paracymene)

Niaouli (Viridiflorol/ Para-cymene/1,8 -cineole CT)	0.4%-40.0%
Thyme (Carvacrol CT)	0.0%-34.6%
Thyme (Thymol CT)	0.0%-29.0%
Frankincense (<i>B. carterii</i>)	3.0%-17.0%
Frankincense (<i>B. frereana</i>)	5.4%-16.9%
Petitgrain (Mandarin)	0.1%-16.3%
Oregano (Carvacrol CT)	3.0%-12.6%
Melaleuca (Tea Tree)	0.5%-12.0%
Turmeric (Leaves)	4.8%-11.1%
Niaouli (1,8-Cineole CT)	0.0%-10.0%
Blue Tansy (Sabinene CT)	5.9%-8.9%
Oregano (<i>O. syriacum</i> , Thymol CT)	7.0%-8.4%
Lavender (Munstead)	4.8%-8.3%
Lemon (Cold-pressed/expressed)	0.0%-7.8%
Marjoram	3.5%-7.0%
Rosemary (Verbenone CT)	1.1%-6.3%
Fennel (Trans-Anethole CT)	0.0%-6.0%
Lime (Cold-pressed/expressed)	0.0%-5.6%
Oregano (<i>O. syriacum</i> , Carvacrol CT)	3.7%-5.2%
Eucalyptus (Globulus)	0.0%-5.1%
Thyme (Thuyanol-4 CT)	0.0%-5.0%
Oregano (<i>O. onites</i>)	2.5%-4.9%
Cistus (Alpha-Pinene CT)	1.0%-4.8%
Coriander	0.1%-4.4%
Rosemary (Camphor CT)	0.0%-3.8%
Ravensara (Sabinene CT)	1.4%-3.0%
Frankincense (<i>B. sacra</i>)	1.6%-2.7%
Ravensara (Methyl Eugenol CT)	0.5%-1.2%

Patchoulol (Patchouli Alcohol)

Patchouli (Chinese)	22.9%-78.2%
Patchouli (Brazilian)	36.6%-70.7%
Patchouli (Indonesian, Malaysian, Vietnamese)	37.8%-68.0%
Spikenard (Calarene CT)	0.0%-10.6%
Spikenard (Ledene Oxide CT)	9.6%

Phytene-2

Spearmint (Pulegone-Menthone-Isomenthone CT)	0.0%-3.5%
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Phytol

Spearmint (Pulegone-Menthone-Isomenthone CT)	0.0%-2.5%
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Piperitenone

Spearmint (Piperitenone Oxide CT)	1.0%-2.8%
Spearmint (Piperitone Oxide CT)	0.1%-1.3%

Piperitenone Oxide	
Spearmint (Piperitenone Oxide CT)	63.5%-70.3%
Spearmint (Piperitone Oxide CT)	0.1%-4.8%
PiperitoneSpearmint (Piperitone Oxide CT)	0.1%-1.8%
Piperitone Oxide	
Spearmint (Piperitone Oxide CT)	54.2%-72.3%
Pogostol	
Patchouli (Indonesian, Malaysian, Vietnamese)	3.7%-5.5%
Pogostone	
Patchouli (Chinese)	6.0%-32.7%
Precocene I	
Lavender (Brazilian)	13.0%
Propyl Tiglate	
Chamomile (Roman)	10.8%-13.1%
Pulegone	
Spearmint (Pulegone-Menthone-Isomenthone CT)	26.7%-72.1%
Peppermint	0.3%-4.4%
Rosifoliol	
Helichrysum (ssp. <i>microphyllum</i>)	0.0%-20.2%
Sabinene	
Nutmeg (West Indian)	33.0%-57.0%
Nutmeg (East Indian)	6.3%-44.8%
Ravensara (Sabinene CT)	25.0%-34.4%
Juniper (Needles)	0.2%-33.6%
Blue Tansy (Sabinene CT)	13.3%-22.3%
Lime (Cold-pressed/expressed)	0.1%-19.6%
Ravensara (Alpha-Terpinene CT)	16.8%-19.4%
Black Pepper	0.0%-19.2%
Ravensara (1,8-Cineole CT)	11.0%-17.2%
Lavandin (Giant)	0.0%-16.9%
Ravintsara (1,8-Cineole CT)	14.1%-16.8%
Lavandin (Dutch)	0.0%-16.7%
Ravensara (Limonene CT)	3.9%-16.4%
Melissa (Greek, subsp. <i>Altissima</i>)	0.9%-14.7%
Marjoram	4.9%-12.0%
Juniper Berry	2.8%-11.8%
Lavender (True English)	0.1%-11.0%
Bay Laurel	0.1%-10.2%
Blue Tansy (Chamazulene CT)	4.0%-8.6%
Lavandin (Super)	0.0%-6.5%
Frankincense (<i>B. sacra</i>)	1.1%-5.2%
Frankincense (<i>B. carterii</i>)	0.0%-4.9%
Lemon (Cold-pressed/expressed)	0.1%-6.3%
Lemon (Distilled)	0.0%-5.8%
Rosemary (Camphor CT)	0.0%-5.1%
Rosemary (Alpha-Pinene CT)	0.0%-4.6%

Cardamom (Alpha-Terpinyl Acetate CT)	2.6%-4.3%
Silver Fir (<i>A. alba</i>)	0.0%-4.3%
Ravensara (Methyl Chavicol CT)	0.1%-3.4%
Frankincense (<i>B. frereana</i>)	0.0%-2.6%
Ravensara (Methyl Eugenol CT)	0.4%-0.5%
Sabinene Hydrate	
Lavandin (Super)	0.0%-4.6%
Spearmint (Pulegone-Menthone-Isomenthone CT)	0.0%-2.8%
Safrole	
Nutmeg (East Indian)	0.0%-22.1%
Ravintsara (Camphor CT)	0.1%-5.0%
Nutmeg (West Indian)	0.1%-1.4%
Santalene	
Lavender (True English)	0.4%-4.5%
Santene	
Silver Fir (<i>A. alba</i>)	0.0%-5.0%
Sclareol (13-Epi-Sclareol)	
Clary Sage	1.3%-11.5%
Sesquiterpene (MW 204)	
Ylang Ylang (French IV)	7.5%
Seychellene	
Patchouli (Chinese)	0.0%-9.6%
Patchouli (Indonesian, Malaysian, Vietnamese)	3.7%-7.5%
Spathulenol	
German Chamomile	1.7%-4.8%
Lemon Verbena (Leaves)	2.5%-5.2%
Spikenard (Calarene CT)	0.0%-4.3%
Spikenard (Ledene Oxide CT)	2.7%
Terpine n-4-ol (4-Terpineol, Terpineol-4-ol)	
Oregano (Terpinen-4-ol CT)	41.2%-48.0%
Melaleuca (Tea Tree)	37.0%-46.9%
Marjoram	28.9%-38.4%
Thyme (Thuyanol-4 CT)	2.2%-29.6%
Lavender (Munstead)	0.3%-19.5%
Nutmeg (West Indian)	5.8%-17.8%
Lavender (French)	0.1%-13.5%
Black Pepper	0.0%-13.2%
Ravensara (Methyl Eugenol CT)	6.0%-12.0%
Lavender (True English)	7.8%-9.6%
Thyme (Linalool CT)	0.0%-8.5%
Lavender (Bulgarian)	0.1%-7.4%
Ravensara (1,8-Cineole CT)	7.0%-7.2%
Petitgrain (Mandarin)	0.1%-7.1%
Thyme (Carvacrol CT)	0.1%-7.1%

Lavandin (Super)	1.0%-6.7%
Cistus (<i>Viridiflorol-Trans-Pinocarveol CT</i>)	0.7%-6.4%
Juniper Berry	0.1%-6.3%
Thyme (Alpha-Terpeneol CT)	0.0%-6.2%
Niaouli (<i>Viridiflorol/ Para-cymene/1,8-cineole CT</i>)	0.5%-5.0%
Thyme (Thymol CT)	0.0%-5.0%
Ravensara (Limonene CT)	1.7%-4.8%
Galbanum	0.0%-4.1%
Lavandin (Dutch)	1.5%-3.9%
Lavender (Italian)	1.1%-3.6%
Niaouli (1,8-cineole CT)	0.0%-3.0%
Ravensara (Methyl Chavicol CT)	0.0%-2.2%
Lavender (Polish)	1.1%-2.0%

Thujopsene

Cedarwood (Virginian, Wood)	14.6%-30.1%
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Thuyanol-4 (Cis-Sabinene Hydrate)

Thyme (Thuyanol-4 CT)	1.6%-52.2%
Thyme (Linalool CT)	0.0%-20.6%
Thyme (Alpha-Terpeneol CT)	0.0%-13.9%
Thyme (Carvacrol CT)	0.0%-12.2%
Thyme (Thymol CT)	0.0%-3.3%
Marjoram	3.0%-30.2%

Thymol

Thyme (Thymol CT)	21.4%-72.9%
Oregano (<i>O. syriacum</i> , Thymol CT)	36.3%-65.6%
Thyme (Alpha-Terpeneol CT)	0.0%-27.4%
Thyme (Carvacrol CT)	0.0%-27.2%
Thyme (Linalool CT)	0.0%-23.6%
Oregano (Terpinen-4-ol CT)	8.4%-22.0%
Oregano (<i>O. syriacum</i> , Carvacrol CT)	19.2%-21.0%
Thyme (Thuyanol-4 CT)	0.0%-9.3%
Thyme (Geraniol CT)	0.0%-7.9%
Geranium	0.0%-7.8%
Camphor (Camphor CT)	0.0%-6.3%
Oregano (Carvacrol CT)	0.9%-5.9%
Helichrysum (<i>H. italicum</i>)	0.0%-5.4%
Oregano (<i>O. onites</i>)	0.2%-2.8%

Trans-Anethole ((E)-Anethole)

Fennel (Trans-Anethole CT)	31.0%-94.6%
Ravensara (Methyl Chavicol CT)	0.0%-20.1%
Fennel (Methyl Chavicol CT)	1.4%-19.0%

Trans-Carveol

Spearmint (Carvone CT)	0.2%-14.0%
Petitgrain (Bergamot)	0.0%-11.9%
Spearmint (Cis-Ocimenone CT)	5.0%

Trans-Caryophyllene (Trans-Beta-Caryophyllene)

Ylang Ylang (Solvent Extracted)	25.0%-26.1%
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Geranium	0.0%-11.0%
Spearmint (Pulegone-Menthone-Isomenthone CT)	0.0%-8.0%
Trans-Caryophyllene Oxide	
Spike Lavender	0.0%-1.6%
Trans-Isolimonene	
Petitgrain (Mandarin)	0.0%-5.9%
Trans-Pinocarveol	
Cistus (<i>Viridiflorol-Trans-Pinocarveol CT</i>)	1.2%-20.0%
Eucalyptus (Radiata)	0.0%-4.8%
Chamomile (Roman)	0.1%-4.5%
Trans-Sabine ne Hydrate	
Marjoram	3.5%-4.4%
Trans-Verbenol	
Frankincense (<i>B. frereana</i>)	0.0%-8.1%
Pine	0.1%-3.5%
Tricosane	
Rose (Indian)	0.0%-11.3%
Tricyclene	
Silver Fir (<i>A. alba</i>)	0.8%-12.9%
Tsuga	0.0%-6.2%
Spruce (Black)	0.0%-4.6%
Pine	0.1%-4.3%
Undecanol	
Rose (Iranian)	0.0%-5.5%
Valerenol	
Vetiver	0.0%-3.9%
Valeranone (Jatamansone)	
Spikenard (Valeranone CT)	36.7%
Spikenard (Calarene CT)	3.7%-9.7%
Valerena-4,7-Diene	
Spikenard (Calarene CT)	0.0%-6.6%
Verbenone	
Rosemary (Verbenone CT)	7.6%-24.9%
Rosemary (Alpha-Pinene CT)	2.3%-15.3%
Rosemary (Borneol CT)	8.4%
Rosemary (Bornyl Acetate CT)	0.0%-5.7%
Vetiselinol	
Vetiver	0.0%-5.6%
Viridiflorol	
Niaouli (Viridiflorol CT)	10.0%-67.4%
Niaouli (1,8-Cineole/Viridiflorol CT)	8.4%-66.0%

Niaouli (Viridiflorol/ Para-cymene/1,8-cineole CT)	4.0%-50.0%
Niaouli (1,8-Cineole CT)	0.0%-47.9%
Sage (Wild)	9.9%-16.4%
Cistus	0.0%-11.8%
Spanish Sage	0.0%-12.0%
Sage (1,8-Cineole CT)	0.5%-2.9%

Widdrol

Cedarwood (Virginian, Wood)	1.0%-4.6%
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(Z)-Alpha-Santalol

Sandalwood (<i>S. album</i>)	40.4%-57.1%
Sandalwood (<i>S. austrocaledonicum</i>)	28.9%-48.4%
Sandalwood (<i>S. paniculatum</i>)	39.8%-42.6%
Sandalwood (<i>S. spicatum</i>)	5.5%-27.3%

(Z)Alpha-Trans-Bergamotol

Sandalwood (<i>S. album</i>)	2.2%-17.2%
Sandalwood (<i>S. austrocaledonicum</i>)	0.2%-9.0%
Sandalwood (<i>S. paniculatum</i>)	4.2%-5.1%

(Z)-Epi-Beta-Santalol

Sandalwood (<i>S. album</i>)	4.9%-11.2%
Sandalwood (<i>S. austrocaledonicum</i>)	1.9%-5.4%
Sandalwood (<i>S. paniculatum</i>)	3.1%-4.2%

(Z)-Beta-Farnesene

German Chamomile	0.0%-15.9%
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(Z)-Beta-Santalol

Sandalwood (<i>S. album</i>)	20.3%-30.5%
Sandalwood (<i>S. austrocaledonicum</i>)	13.5%-22.0%
Sandalwood (<i>S. paniculatum</i>)	13.7%-16.2%
Sandalwood (<i>S. spicatum</i>)	2.1%-10.5%

(Z)-Cinnamaldehyde (Cis-Cinnamaldehyde)

Cassia (Bark)	4.4%-10.5%
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(Z)-Jasmone

Spearmint (Cis-Ocimenone CT)	1.3%
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(Z)-Lanceol

Sandalwood (<i>S. austrocaledonicum</i>)	0.0%-9.1%
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(Z)-Nuciferol

Sandalwood (<i>S. austrocaledonicum</i>)	1.6%-8.7%
Sandalwood (<i>S. spicatum</i>)	5.6%-6.5%
Sandalwood (<i>S. paniculatum</i>)	3.2%-4.8%
Sandalwood (<i>S. album</i>)	1.8%-5.2%

Zingiberene

Ginger	5.7%-32.2%
Turmeric (Rhizome, Distilled)	0.0%-4.4%

Aconitum: Generally used during the initial stages of illness or injury. Symptoms are sudden, often worse from exposure to cold, and sometimes intense. Anxiety, fear, restlessness, and grief are often present.

Apis Mellifica: Commonly used for insect stings or bites and burning or stinging pains. Symptoms are characterized by swelling, aggravation by warmth, and relief by cold.

Ambrosia: This is a common remedy for hay fever with intensely itchy eyelids and profuse watery nasal discharge. It is also used for whooping cough. In addition, the throat may be irritated and breathing labored in people who need this remedy.

Antimonium Crudum: This remedy acts powerfully on the mucous membranes and skin. A thick, white coating is almost always present on the tongue when this remedy is needed. Symptoms include severe irritability, especially in children, who don't even want to be looked at. Digestive problems are usually present.

Arnica (Arnica Montana): This is an excellent remedy for common injuries, trauma, bruising, swelling, and muscle soreness. Arnica may relieve old injuries that still cause discomfort. It is frequently used before and after surgery.

Belladonna: This remedy is commonly given to those with a flushed, red face and glassy eyes. It is useful when symptoms appear and vanish suddenly. Throbbing pains, hypersensitivity to touch, fever, and hot, red mucous membranes are also key symptoms.

Bryonia (Bryonia Alba): This remedy is usually given when symptoms are made worse by motion. Key symptoms include sharp pain, dry mouth and/or rectum, thirst for cold drinks, and relief from pressure to painful area. The person who needs this remedy is frequently irritable and wants to be left alone.

Calcarea Phos (Calcarea Phosphorica, Calc Phos): People who need this remedy are usually friendly but insecure. They become fatigued and bored easily. Nutritional deficiencies and weak or brittle bones may also be a problem.

Calendula: This remedies prevents wound infections and aids tissue regeneration to speed the healing of wounds and burns. It should not be used for a deep wound because it may cause the outer layers of the skin to heal more quickly than the deeper layers.

Cardiospermum: Extracted from the flowering tropical balloon vine, this gel or cream helps relieve itching and inflammation of the skin. It is considered a natural alternative to cortisone creams and is widely used for the relief of eczema and rashes.

Causticum Hahnemanni: This remedy is useful for individuals who are very serious and introspective. They may experience mental exhaustion and sadness after a specific event. It is particularly useful for injuries that involve decreased muscle power, tendon injuries, and rheumatic

conditions. It is predominantly used for chronic conditions, as opposed to acute conditions.

Chamomilla: People who need this remedy are usually hypersensitive (physically and psychologically) and hard to please. Infants may only be comforted if they are held and carried. Key symptoms include sour discharges from the body (stool, vomit, and sweat) and pain that is not proportional to the condition experienced.

Coffea: This remedy helps relieve hyperactivity, restlessness, over-sensitivity, and exaggerated senses. It may be useful for people who become overanxious prior to an event, or who are unable to sleep because of overactivity. Other tell-tale symptoms of this remedy include unusual activity of mind/body and hypersensitivity to the symptoms of the condition being experienced.

Cocculus: In general, this remedy is used for travel sickness experienced in a car, boat, or airplane. It may also be useful for nausea during pregnancy.

Equisetum: This remedy may be useful for bedwetting and other symptoms involving the urinary system. The person may feel a constant desire to urinate. Symptoms are usually worse with pressure, movement, or touch.

Gelsemium: This remedy is for those with general fatigue (physical and mental). The eyelids and extremities may feel heavy and the person may be drowsy and lethargic.

Hepar Sulphur: People who need this remedy are usually hyper and excitable (physically and psychologically). They are also very irritable, impulsive, anger easily, and argumentative. Key symptoms include highly sensitive skin, dislike of cold weather, a low pain threshold, and offensive discharges and perspiration.

Kali Bichromicum (Kali Bic): This remedy is best suited for detail-oriented individuals that tend to see things only in black and white. Key symptoms include thick, yellowish or greenish discharges, pain that migrates from place to place, and symptoms that get worse in the cold.

Mercurius: This remedy is well suited to handle advanced stages of acute conditions. Symptoms are usually worst at night, during wet weather, or with extreme temperature changes. The person often experiences excess perspiration and salivation, as well as copious and unpleasant discharges.

Natrum Sulphuricum: This remedy is considered a preferred remedy for liver and gallbladder problems, like gallstones. It is also valuable for head injuries—particularly headaches and mental troubles caused by them. People who need this remedy tend to experience worsening of their symptoms in dry weather, from pressure, or when changing positions.

Nux Vomica: This remedy should be the first thought when symptoms occur after overindulgence in rich foods or beverages. Symptoms may also occur after long-term stress. The person is very irritable and may experience constipation.

Oscillocochinum (Anas Barbariae): A very popular flu remedy in France used during the first 48 hours of flu-like symptoms. Sometimes used for the common cold also.

Pilocarpinum: This remedy potently stimulates glandular function. It effectively relieves excessive perspiration and salivation. Many homeopaths consider this the best remedy for mumps and its

associated symptoms, particularly if excess perspiration or salivation is present.

Pulsatilla: This is the most often used remedy for acute conditions in children. Symptoms are usually worse in warm rooms or hot weather and may begin after eating rich or fatty foods. Children who need this remedy may be generally easygoing but may crave attention and be moody and sensitive.

Rhus Tox (Rhus Toxicodendron): A key symptom that this remedy relieves is stiffness after rest that is worse after initial movement but improves with more motion. Symptoms may be aggravated by cold, wet weather and at night. The person who needs this remedy is usually restless and has achy joints and ligaments (like those caused by rheumatoid arthritis or other joint disorders).

Ruta Graveolens (Ruta or Rue): This remedy is effective for injuries to bones, tendons, and ligaments (fractures, sprains). It may be helpful after joint surgery (knee, elbow) and for bruises that leave a hard spot.

Spongia (Spongia Tosta): Typical characteristics of people who need this remedy include fear of death (especially dying of heart-related causes), late risers, exhaustion after slight exertion, and waking up fearful, anxious, and grumpy. Spongia is very useful for respiratory conditions and is commonly prescribed for children with a croupy cough.

Sulphur: This remedy is commonly used for chronic conditions. Children who need this remedy are usually very messy, intelligent, and self-centered. Key symptoms include feeling warm, symptoms aggravated by heat, red mucous membranes, face, and lips, and dry skin.

Thuja occidentalis: This cream or gel is primarily used to treat a variety of skin conditions including warts, fungal infections, and skin cancer. It has also been used topically to soothe the pains of arthritis and rheumatism.

Urtica Urens: Key symptoms of this remedy include burning, stinging, red, irritated skin rashes. People who need this remedy may be impatient, irritable, and restless. It is useful for hives, particularly hive-like eruptions associated with rheumatic conditions.

Abscesses, Heals: Melaleuca (tea tree), niaouli

Acceptance, Encourages: Sandalwood, spruce (black), wintergreen

Adaptogenic: Lavender, lemon

Adrenal Function, Supports: Basil, nutmeg, spruce (black)

Agitation, Eases: Melissa

Aggression, Combats: Bergamot, sandalwood

Alertness, Promotes: Peppermint, wintergreen

Analgesic (Pain Relief): Balsam fir, basil, bay laurel, bergamot, birch, black pepper, blue cypress, blue spruce, blue tansy, cajeput, camphor, cassia, cinnamon, citronella, clove, copaiba, coriander, eucalyptus, fennel, frankincense, galbanum, geranium, German chamomile, ginger, helichrysum, juniper berry, lavandin, lavender, lemon, lemon verbena, lemongrass, marjoram, melaleuca (tea tree), neroli, niaouli, nutmeg, oregano, palo santo, peppermint, pine, ravensara, ravintsara, Roman chamomile, rosemary, sandalwood, silver fir, spearmint, spike lavender, spruce (black), thyme, tsuga, turmeric, vetiver, white fir, wintergreen

Anesthetic: Bay laurel, clove, eucalyptus, peppermint, thyme

Anger/Rage, Reduces: Blue tansy, German chamomile, melissa, peppermint, petitgrain, pine, Roman chamomile, rose, vetiver, ylang ylang

Antiaging: Clove, frankincense, galbanum

Antiallergenic: Blue cypress, blue tansy, German chamomile, goldenrod, helichrysum, lemongrass, oregano, palo santo, ravensara, spikenard

Antiarthritic: Cassia, frankincense, galbanum, German chamomile, juniper berry, marjoram, ravintsara, rosemary, silver fir, thyme, turmeric, vetiver, white fir, wintergreen

Antibacterial: Balsam fir, basil, bay laurel, bergamot, black pepper, blue cypress, blue spruce, blue tansy, cajeput, camphor, cassia, cinnamon, cistus, citronella, clary sage, copaiba, coriander, cypress, eucalyptus, geranium, German chamomile, ginger, grapefruit, helichrysum, lavandin, lavender, lemon, lemon verbena, lemongrass, lime, marjoram, melaleuca (tea tree), melissa, myrtle, neroli, niaouli, orange, oregano, palmarosa, palo santo, patchouli, peppermint, petitgrain, pine, ravensara, ravintsara, Roman chamomile, rose, rosemary, sage, sandalwood, spearmint, spikenard, thyme, turmeric, vetiver, ylang ylang

Anticancer: Balsam fir, basil, bay laurel, bergamot, camphor, cardamom, clove, frankincense, ginger, lavender, lemongrass, melaleuca (tea tree), orange, oregano, palo santo, peppermint, rosemary, silver

fir, turmeric

Anticonvulsive: Citronella, lemongrass, neroli, rose, spearmint

Antidepressant: Bergamot, birch, carrot seed, cassia, clary sage, coriander, frankincense, galbanum, geranium, German chamomile, grapefruit, helichrysum, lavandin, lavender, lemon, lemon verbena, lemongrass, lime, melissa, neroli, orange, oregano, palmarosa, patchouli, petitgrain, ravensara, ravintsara, Roman chamomile, rose, rosemary, spearmint, spike lavender, tangerine, thyme, vetiver, ylang ylang

Antifungal: Balsam fir, bay laurel, blue cypress, blue tansy, cajeput, cedarwood, citronella, clove, copaiba, coriander, eucalyptus, fennel, helichrysum, lavandin, lavender, lemon, lemongrass, marjoram, melaleuca (tea tree), melissa, myrrh, neroli, orange, oregano, patchouli, peppermint, petitgrain, pine, ravensara, ravintsara, rosemary, sage, sandalwood, spearmint, spike lavender, spikenard, thyme, tsuga, turmeric, vetiver, ylang ylang

Anti-infectious: Blue cypress, cinnamon, goldenrod, melaleuca (tea tree), neroli, oregano, pine, ravensara, ravintsara, spikenard, tsuga

Anti-inflammatory: Balsam fir, basil, bay laurel, bergamot, birch, black pepper, blue cypress, blue spruce, blue tansy, camphor, cedarwood, cistus, citronella, clove, copaiba, cypress, frankincense, galbanum, geranium, German chamomile, ginger, goldenrod, helichrysum, lavender, lemon, lemon verbena, lemongrass, lime, marjoram, melaleuca (tea tree), myrrh, neroli, orange, oregano, palo santo, patchouli, petitgrain, pine, ravintsara, Roman chamomile, rose, sage, sandalwood, silver fir, spearmint, spike lavender, spikenard, spruce (black), tangerine, thyme, tsuga, turmeric, vetiver, white fir, wintergreen, ylang ylang

Antimicrobial: Balsam fir, bay laurel, birch, cajeput, camphor, cardamom, cassia, cinnamon, cistus, clove, galbanum, helichrysum, juniper berry, lavender, lemon, lemongrass, melaleuca (tea tree), myrrh, myrtle, oregano, peppermint, pine, ravensara, Roman chamomile, silver fir, spike lavender, spruce (black), tangerine, thyme, tsuga, turmeric, vetiver, white fir

Antineuralgic: Bay laurel, blue spruce, cajeput, cistus, coriander, eucalyptus, geranium, German chamomile, ginger, lemon, lemongrass, marjoram, peppermint, pine, Roman chamomile, rosemary, sandalwood, spearmint

Antioxidant: Balsam fir, basil, black pepper, blue spruce, blue tansy, carrot seed, citronella, clove, frankincense, geranium, German chamomile, ginger, grapefruit, helichrysum, juniper berry, lemongrass, nutmeg, oregano, palo santo, pine, rosemary, silver fir, thyme, tsuga, turmeric, vetiver, white fir

Antioxidant Production (GSH, SOD), Increases: Black pepper, clove, orange

Antiparasitic: Bergamot, cajeput, camphor, carrot seed, cassia, cinnamon, citronella, clove, fennel, galbanum, lemon, lemon verbena, lemongrass, niaouli, pine, Roman chamomile, thyme, turmeric, vetiver

Antirheumatic: Balsam fir, bay laurel, camphor, cassia, cedarwood, citronella, coriander,

eucalyptus, frankincense, galbanum, German chamomile, juniper berry, lemon, marjoram, niaouli, nutmeg, pine, ravintsara, Roman chamomile, rosemary, silver fir, thyme, turmeric, vetiver, white fir, wintergreen

Antiseptic: Bay laurel, bergamot, blue spruce, cajeput, camphor, cardamom, carrot seed, cedarwood, cinnamon, cistus, citronella, clary sage, clove, copaiba, cypress, eucalyptus, fennel, frankincense, galbanum, geranium, German chamomile, ginger, goldenrod, grapefruit, juniper berry, lavandin, lavender, lemon, lemon verbena, lemongrass, lime, marjoram, melaleuca (tea tree), melissa, myrrh, myrtle, neroli, niaouli, nutmeg, orange, palmarosa, palo santo, patchouli, peppermint, pine, ravensara, ravintsara, Roman chamomile, rose, rosemary, sage, sandalwood, silver fir, spearmint, spike lavender, spikenard, spruce (black), tangerine, thyme, tsuga, turmeric, vetiver, white fir, wintergreen, ylang ylang

Antispasmodic: Balsam fir, basil, bay laurel, bergamot, birch, blue tansy, cajeput, camphor, cardamom, cassia, cedarwood, citronella, clove, coriander, cypress, eucalyptus, galbanum, German chamomile, ginger, helichrysum, juniper berry, lavandin, lavender, lemon verbena, lime, marjoram, melissa, myrrh, neroli, niaouli, nutmeg, orange, oregano, palo santo, peppermint, petitgrain, ravensara, Roman chamomile, rose, rosemary, sage, sandalwood, silver fir, spearmint, spike lavender, spikenard, spruce (black), tangerine, thyme, turmeric, vetiver, white fir, wintergreen, ylang ylang

Antitumor: Fennel, frankincense, melissa, myrrh, sandalwood, thyme, turmeric

Antiviral: Basil, black pepper, blue cypress, blue tansy, cajeput, camphor, cassia, cinnamon, cistus, clary sage, clove, eucalyptus, lavandin, lemon verbena, lemongrass, lime, marjoram, melaleuca (tea tree), melissa, myrrh, oregano, palmarosa, patchouli, pine, ravensara, ravintsara, rose, sage, thyme, turmeric

Anxiolytic (Reduces Anxiety): Balsam fir, basil, bergamot, blue tansy, carrot seed, cedarwood, cistus, clary sage, copaiba, coriander, fennel, frankincense, German chamomile, lavandin, lavender, lemon verbena, lime, marjoram, melissa, neroli, nutmeg, orange, palmarosa, palo santo, petitgrain, pine, ravensara, ravintsara, Roman chamomile, spearmint, spike lavender, spikenard, spruce (black), tangerine, turmeric, vetiver, ylang ylang

Aphrodisiac: Cardamom, cedarwood, clary sage, clove, coriander, ginger, myrtle, neroli, nutmeg, orange, patchouli, ravensara, rose, rosemary, sandalwood, vetiver, ylang ylang

Appetite, Stimulates: Bay laurel, cardamom, coriander, lime

Appetite, Balances: Grapefruit

Astringent: Birch, cajeput, cassia, cedarwood, cistus, citronella, clary sage, cypress, geranium, ginger, grapefruit, helichrysum, juniper berry, lemon, lemongrass, lime, myrrh, myrtle, peppermint, rose, rosemary, sage, sandalwood, spruce (black), tsuga, wintergreen,

Attention, Focuses: Frankincense

Bile, Stimulates Release/Flow of: Bay laurel, melissa, peppermint, rosemary, spike lavender

Bites (Snake), Relieves: Turmeric

Bleeding, Stops Excess: Cistus, cypress, geranium, lime, rosemary

Blemishes/Scars/Wrinkles, Reduces Appearance of: Bergamot, cajeput, camphor, carrot seed, cedarwood, cistus, clove, fennel, frankincense, galbanum, geranium, German chamomile, grapefruit, helichrysum, juniper berry, lavandin, lavender, lemon, lemon verbena, lime, melaleuca (tea tree), melissa, myrtle, neroli, niaouli, palmarosa, patchouli, petitgrain, ravintsara, Roman chamomile, rose, rosemary, sandalwood, tangerine, thyme, vetiver

Blisters, Heals: German chamomile, lavender, melaleuca (tea tree), Roman chamomile

Blood Clots, Helps Clear: Helichrysum

Blood Pressure (High), Normalizes: Lavender, lemon, marjoram, melissa, neroli, sandalwood, ylang ylang

Blood, Purifies: Birch, cinnamon, clove, spike lavender, coriander, rose, tangerine

Blood Sugar, Supports Normal Levels: Cassia, cinnamon, clove, coriander, eucalyptus, fennel, geranium

Boils, Supports Healing of: Lavender, lemon, melaleuca (tea tree), niaouli, Roman chamomile

Bone Growth (Abnormal), Removes: Eucalyptus

Bone Pain, Relieves: Balsam fir, wintergreen

Bone Turnover, Promotes Healthy: Pine, rosemary, sage, thyme

Brain Function/Cognition, Aids: Cinnamon, clove, marjoram, nutmeg, rosemary, turmeric

Brain Neurons, Regenerates: Turmeric

Bronchodilator (Increases Airflow to the Lungs): Ginger, myrtle, oregano, peppermint

Bruises, Reduces: Cinnamon, geranium, helichrysum, lavender, lemongrass

Burnout, Reduces: Basil, rosemary

Burns/Sunburns, Soothes: Lavender, melaleuca (tea tree), niaouli, Roman chamomile

Burns (Radiation), Heals: Melaleuca (tea tree), niaouli

Cardiovascular Function, Supports: Bergamot, camphor, goldenrod, marjoram, melissa, nutmeg, rose, rosemary, sandalwood, spikenard, thyme, ylang ylang

Cell Cycle (Healthy), Supports: Frankincense, helichrysum, tangerine, thyme, vetiver, ylang ylang

Cellular Regeneration, Supports: Carrot seed, cistus, frankincense, geranium, myrrh, neroli, palmarosa, spikenard, wintergreen

Circulation, Aids/Stimulates: Basil, birch, black pepper, cajeput, carrot seed, cassia, cedarwood, cinnamon, clove, coriander, cypress, galbanum, ginger, goldenrod, helichrysum, lemongrass, lime, marjoram, myrrh, niaouli, palmarosa, silver fir, white fir,

Circulation/Redness, Increases Localized: Camphor, nutmeg, patchouli, rosemary, silver fir, spike lavender, spruce (black), thyme, tsuga, vetiver, white fir

Colic, Soothes: Fennel, German chamomile, lavender, Roman chamomile

Communication, Encourages Open: Fennel

Concentration/Focus, Aids: Balsam fir, bay laurel, cardamom, copaiba, eucalyptus, frankincense, galbanum, lemon, myrrh, niaouli, palo santo, peppermint, sandalwood, vetiver

Confusion, Reduces: Basil, bay laurel, cajeput, clary sage, rosemary

Constipation, Relieves: Cardamom, fennel, ginger, lemon, marjoram, nutmeg, patchouli, rose, spikenard, tangerine

Cough, Eases/Soothes: Balsam fir, basil, cajeput, camphor, cassia, cedarwood, cistus, cypress, eucalyptus, fennel, frankincense, goldenrod, lavender, melaleuca (tea tree), myrtle, nutmeg, palo santo, pine, ravensara, ravintsara, rose, silver fir, spruce (black), thyme, tsuga, turmeric, white fir, wintergreen

Courage, Increases: Black pepper, cinnamon, clove, ginger

Creativity, Stimulates: Helichrysum, myrrh, neroli, palo santo, peppermint, petitgrain, ravensara

Decongestant: Balsam fir, basil, bay laurel, bergamot, black pepper, cajeput, clove, copaiba, eucalyptus, galbanum, goldenrod, grapefruit, marjoram, myrtle, niaouli, palo santo, patchouli, peppermint, pine, rosemary, sage, sandalwood, spearmint, white fir

Deodorant: Citronella, cypress, lemongrass, neroli, nutmeg, petitgrain, wintergreen

Detoxification, Aids: Birch, carrot seed, galbanum, grapefruit, helichrysum, lemon, lemongrass, melaleuca (tea tree), nutmeg, pine, Roman chamomile, vetiver

Diarrhea, Relieves: Cassia, fennel, ginger, lemongrass, melaleuca (tea tree), peppermint

Digestive Aid: Basil, bergamot, birch, cajeput, cardamom, cassia, cinnamon, citronella, clary sage, clove, copaiba, coriander, fennel, frankincense, German chamomile, ginger, grapefruit, juniper berry, lavender, lemon, lemon verbena, lemongrass, melissa, neroli, nutmeg, orange, palmarosa, patchouli, peppermint, petitgrain, Roman chamomile, rosemary, spearmint, tangerine, turmeric

Disinfectant: Bergamot, lemon, lime, orange, pine, Roman chamomile, sandalwood, silver fir, white fir, ylang ylang

Despondency, Combats: Bergamot, clary sage, sandalwood, thyme, ylang ylang

Distractions (Mental), Reduces: Myrrh

Diuretic: Basil, bay laurel, camphor, cardamom, carrot seed, cedarwood, citronella, cypress, eucalyptus, fennel, frankincense, geranium, ginger, goldenrod, grapefruit, helichrysum, juniper berry, lavender, lemon, lemongrass, orange, oregano, pine, ravensara, Roman chamomile, rosemary, sage, sandalwood, spearmint, spike lavender, spruce (black), tangerine, thyme, tsuga, turmeric, wintergreen

Earache, Relieves: Cajeput, basil, lavender, melaleuca (tea tree)

Emotionally Stabilizing/Balancing: Balsam fir, fennel, geranium, helichrysum

Empowerment, Encourages Feelings of: Silver fir, white fir

Endocrine System, Supports: Balsam fir, tsuga

Energizing: Cassia, fennel, grapefruit, lemongrass, ravensara, rosemary, silver fir, spearmint, white fir

Euphoria, Promotes: Clary sage, ylang ylang

Exhaustion/Fatigue (Mental), Relieves: Black pepper, cajeput, eucalyptus, ginger, lemongrass, nutmeg, peppermint, pine, rosemary, spearmint, spruce (black), thyme

Expectorant: Black pepper, camphor, cedarwood, cistus, clove, copaiba, cypress, eucalyptus, fennel, frankincense, ginger, goldenrod, helichrysum, lavandin, marjoram, melaleuca (tea tree), myrtle, niaouli, orange, oregano, palo santo, peppermint, pine, ravensara, rosemary, sage, silver fir, spearmint, spike lavender, thyme, tsuga, white fir, ylang ylang

Eye Health, Protects/Improves: Frankincense, lemongrass, pine

Fats, Breaks Down/Metabolizes: Coriander, sage,

Fear, Combats: Black pepper, cedarwood, frankincense, grapefruit, lavender, niaouli, ravintsara, vetiver, ylang ylang

Fever, Reduces: Bay laurel, bergamot, birch, cajeput, eucalyptus, German chamomile, helichrysum, lavender, lemon, lemon verbena, lemongrass, lime, melissa, niaouli, palmarosa, patchouli, peppermint, Roman chamomile, rose, sandalwood, silver fir, spearmint, white fir

Fluid Retention, Reduces Excess: Cypress, grapefruit, juniper berry, tangerine

Forgiveness, Fosters: Helichrysum, spruce (black), wintergreen

Frustration, Removes: German chamomile, ginger, lemon, ylang ylang

Gallbladder Supportive: German chamomile, juniper berry, lemon verbena, peppermint, rosemary, wintergreen

Gallbladder, Reduces Inflammation: Pine

Gallstones, Eliminates: Pine

Gas, Expels Excess: Basil, bay laurel, birch, cajeput, cardamom, carrot seed, cassia, clary sage,

clove, coriander, fennel, frankincense, German chamomile, ginger, lemon, lemongrass, marjoram, myrrh, neroli, nutmeg, orange, oregano, patchouli, peppermint, petitgrain, ravensara, Roman chamomile, rosemary, sandalwood, spearmint, spike lavender, tangerine, thyme, turmeric, wintergreen

Gastrointestinal Tract, Heals/Protects: Black pepper, cardamom, cedarwood, clove, copaiba, German chamomile, ginger, lemongrass, marjoram, myrtle, neroli, oregano, turmeric

Glands, Reduces Inflammation of: Bay laurel, lemon, lemongrass

Grief/Despair, Combats: Cypress, frankincense, marjoram, melissa, rose, vetiver

Grounding: Balsam fir, blue cypress, blue spruce, cedarwood, cinnamon, palo santo, pine, spruce (black), tsuga, vetiver

Guilt, Diminishes: Cardamom, cypress, juniper, sandalwood, thyme

Gum (Inflammation), Reduces: melaleuca (tea tree)

Hair, Nourishes/Strengthens: Carrot seed, lemon, lemon verbena, rosemary, ylang ylang

Hair Loss, Slows/Reverses: Cedarwood, melaleuca (tea tree), rosemary, thyme, ylang ylang

Headache/Migraine Relief: Basil, coriander, lavender, lemongrass, peppermint, Roman chamomile, rosemary, spearmint, spikenard, thyme

Hemorrhoids/Anal Fissures, Relieves: Cistus, cypress, melaleuca (tea tree), neroli

Hormones, Stimulates Release/Balances: Bergamot, blue spruce, cardamom, clary sage, geranium, melaleuca (tea tree), melissa, rose, sage, spikenard

Hysteria, Combats: Melissa

Imagination, Stimulates: Geranium

Immune Supportive: Balsam fir, blue tansy, copaiba, galbanum, grapefruit, lavender, lemon, lime, melaleuca (tea tree), oregano, palo santo, peppermint, rosemary, sage, white fir

Immune Modulator: Cistus, frankincense

Injury (Sports), Recovery From: Ginger, lemongrass, melaleuca (tea tree), thyme, wintergreen

Insect Bites/Stings, Relieves: Basil, cardamom, melaleuca (tea tree), niaouli, spike lavender, turmeric

Insect Repellant: Citronella, clove, eucalyptus, lavandin, lemongrass, rosemary, vetiver

Inspiration, Promotes: Clary sage

Introspection, Promotes: Copaiba

Invigorating: Eucalyptus, myrtle, peppermint

Irritability (Emotional), Reduces: Coriander, lavender, myrrh, sandalwood

Joy/Pleasure, Increases: Ylang ylang

Kidney Stones, Prevents/Eliminates: Goldenrod, lemon, juniper berry

Libido, Enhances: Cassia, clary sage, nutmeg, rose, ylang ylang

Libido, Decreases: Marjoram

Liver Supportive: Cajeput, carrot seed, copaiba, cypress, geranium, German chamomile, goldenrod, helichrysum, juniper berry, lemon verbena, nutmeg, peppermint, petitgrain, Roman chamomile, rose, rosemary, spearmint, turmeric, wintergreen

Loneliness, Reduces: Bergamot, frankincense, Roman chamomile, rose

Love, Encourages Feelings of: Juniper, lavender, rose, ylang ylang

Lymph System Supportive: Bay laurel, cistus, galbanum, geranium, goldenrod, grapefruit, orange, ravensara, sandalwood, spikenard

Meditation, Aids: Balsam fir, frankincense, myrrh, palo santo

Memory/Cognition, Aids: Black pepper, coriander, rosemary, sage, sandalwood, thyme,

Menstrual Pain/PMS/Cramps, Alleviates: Cinnamon, clary sage, coriander, cypress, German chamomile, juniper berry, lavender, marjoram, nutmeg, oregano, palo santo, Roman chamomile, rosemary

Menstruation, Balances: Cajeput, fennel, galbanum, geranium, lavandin, melissa, rose, wintergreen

Mental Clarity, Promotes: Basil, citronella, myrtle, patchouli, turmeric

Mentally Stimulating: Basil, rosemary, sage

Metabolism, Enhances: Cardamom, cinnamon, fennel, pine

Mind, Calming to: Myrrh, palmarosa

Mood Swings, Reduces: Bergamot, carrot seed, marjoram, spruce (black), ylang ylang

Morale, Enhances: Cinnamon

Motivation, Encourages: Basil, ginger

Mouth Sores, Reduces/Heals: Lavender, lemon, melaleuca (tea tree), peppermint

Mucous, Removes Excess: Balsam fir, bay laurel, blue tansy, cajeput, niaouli, pine, sage, silver fir, tsuga, white fir,

Muscles, Relaxes: Balsam fir, basil, birch, German chamomile, lavender, marjoram, palmarosa, peppermint, sage, white fir, wintergreen

Muscle Tone, Improves: Basil, marjoram

Nails, Strengthens: Carrot seed, grapefruit, lemon, myrrh, ravenara

Nausea/Vomiting, Relieves: Basil, cassia, German chamomile, ginger, lemon, patchouli, peppermint, petitgrain

Negative Emotions, Past Trauma, Corrects/ Releases/Heals: Balsam fir, bergamot, blue spruce, copaiba, eucalyptus, frankincense, helichrysum, marjoram, rose, tsuga

Nervine (Soothes and/or Supports Nerves): Basil, bergamot, blue spruce, cardamom, cistus, citronella, clary sage, eucalyptus, geranium, German chamomile, helichrysum, lavender, lemongrass, marjoram, melissa, myrtle, patchouli, peppermint, petitgrain, pine, Roman chamomile, rose, rosemary, sage, spearmint, spike lavender, tsuga, turmeric, vetiver, ylang ylang

Nightmares, Combats: Lemon, melissa

Nutrient Absorption, Improves: Black pepper, galbanum, melaleuca (tea tree), niaouli

Oppressive Feelings, Reduces: Melaleuca (tea tree)

Oral Cleanliness, Promotes: Eucalyptus, frankincense, peppermint, rosemary

Overactive Mind, Calms: Patchouli

Oversensitivity (Emotional), Reduces: Roman chamomile

Overwhelming Feelings, Reduces: Cardamom, cypress, juniper berry, nutmeg

Panic Attacks, Relieves: Lavender

Pancreas Function, Supports: Copaiba, juniper berry, lemon verbena, peppermint

Peaceful Feelings, Fosters: Cistus, myrrh, spikenard

Penetration (Other Oils), Enhances: Camphor

Perfectionism, Reduces: Cypress, orange

Perspective, Encourage a Fresh: Peppermint, petitgrain

Perspiration (Excess), Reduces: Citronella, cypress, petitgrain, sage

Perspiration, Promotes: Birch, camphor, rosemary, spike lavender

Pessimism, Removes: Blue cypress, orange

Possessive/Jealous Feelings, Combats: Palmarosa

Radiation Damage, Protects Against: Cajeput, melaleuca (tea tree), patchouli

Red Blood Cells, Encourages Production of: Helichrysum, lemon

Refreshing: Eucalyptus, lemon, pine, peppermint

Regenerative/Restorative: Cedarwood, geranium, grapefruit, lime, neroli, patchouli, rosemary, tangerine

Relaxing/Calming: Balsam fir, basil, bergamot, blue cypress, blue spruce, blue tansy, citronella, galbanum, German chamomile, goldenrod, lavandin, melissa, palo santo, petitgrain, Roman chamomile, spikenard, tsuga, wintergreen

Reproductive Health, Supports: Frankincense

Respiratory Supportive: Balsam fir, basil, black pepper, blue cypress, blue spruce, cajeput, camphor, cistus, cypress, eucalyptus, frankincense, ginger, lavandin, melissa, myrtle, niaouli, palo santo, pine, ravensara, ravintsara, silver fir, tsuga, white fir, ylang ylang

Rigidity (Emotional), Combats: Galbanum

Security, Promotes Sense of: Bergamot, cedarwood, cypress, geranium, oregano, Roman chamomile, spruce (black)

Sedating: Bay laurel, bergamot, blue tansy, cedarwood, clary sage, cypress, frankincense, geranium, German chamomile, juniper berry, lavender, lemon, lemongrass, marjoram, myrrh, myrtle, neroli, sandalwood, spikenard, ylang ylang

Self-confidence, Encourages: Basil, bay laurel, blue cypress, clove, cypress, fennel, melaleuca (tea tree), niaouli, peppermint, ravintsara, rosemary, spruce (black), thyme, wintergreen

Self-destructive Behavior, Reduces: Myrtle

Shame, Lessens: Cardamom

Shock, Relieves: Cistus, galbanum, lavandin, lavender, melaleuca (tea tree), neroli, spike lavender

Sinusitis, Relieves: Ravintsara

Skin, Brightens: Cajeput

Skin, Encourages Pigment Production: Black pepper

Skin, Heals: Cistus, lavender, myrrh, rose

Skin, Improves Luster: Basil, lemon

Skin, Nourishes: Blue tansy, carrot seed, lemon, lemon verbena, patchouli, rose, sandalwood, turmeric

Skin, Protects From UV Damage: Black pepper, patchouli

Skin, Relieves Itching: Blue cypress, peppermint

Skin, Softens/Moisturizes: Galbanum, helichrysum, rose, sandalwood

Skin Conditions, Helps Relieve Chronic: Cistus, helichrysum, juniper berry, melissa, myrrh, patchouli, pine, ravintsara, Roman chamomile, rosemary, sandalwood, spike lavender

Skin (Oily), Reduces: Citronella, cypress, ylang ylang

Skin Tone, Evens: Bergamot, patchouli

Sleep, Encourages Restful: Bergamot, cedarwood, clary sage, lavender, lemon, lime, marjoram, melissa, myrtle, neroli, petitgrain, rose, tangerine, vetiver

Smoking Cessation: Black pepper

Sore Throat, Relieves: Bergamot, cinnamon

Spleen Function, Supports: Helichrysum

Stability/Balance, Encourages Feelings of: Ginger, silver fir, turmeric, white fir

Stimulating: Birch, cajeput, camphor, cardamom, carrot seed, cassia, clove, copaiba, coriander, eucalyptus, ginger, grapefruit, helichrysum, lavender, niaouli, nutmeg, orange, patchouli, peppermint, pine, ravensara, silver fir, spearmint, spike lavender, tangerine, thyme, white fir, wintergreen

Stomach Acid, Stimulates Production: Black pepper

Stress Management: Basil, blue tansy, cardamom, cedarwood, clary sage, clove, copaiba, frankincense, German chamomile, grapefruit, helichrysum, lavandin, lavender, lemon, lemon verbena, lemongrass, lime, marjoram, neroli, nutmeg, orange, palmarosa, palo santo, patchouli, pine, ravensara, ravintsara, Roman chamomile, rose, rosemary, sandalwood, spearmint, spike lavender, spikenard, spruce (black), tangerine, turmeric, vetiver, ylang ylang

Tantrums, Calms: German chamomile, Roman chamomile

Thinking (Obsessive), Reduces: Marjoram

Thyroid Function, Supports: Balsam fir, lemon verbena, myrtle, spruce (black)

Tissue, Supports Regeneration: Blue tansy, cistus, lavender

Traumatic Events, Helps Manage Better: Cistus, cypress

Transitions Difficult (Emotionally), Aids: Cypress, lemongrass, palmarosa

Uplifting: Balsam fir, bergamot, cinnamon, lemon, lime, melissa, niaouli, orange, palmarosa, petitgrain, tsuga

Urinary Tract Health, Supports: Goldenrod, juniper berry, myrtle

Uric Acid, Clears Body of: Juniper berry, peppermint, pine

Vasodilator: Goldenrod, marjoram

Vertigo, Relieves: Frankincense, ginger, lavender, melissa, ylang ylang

Warming: Balsam fir, basil, bay laurel, cajeput, cardamom, coriander, cypress, marjoram, melissa, oregano, spruce (black), turmeric, wintergreen

Warts, Removes: Cinnamon, clove, frankincense, melaleuca (tea tree), oregano

Weight Management: Black pepper, coriander, grapefruit, lemon, lime, turmeric

Well-being (General Feeling), Encourages: Bergamot, oregano

Worrisome/Negative Thoughts, Combats: Juniper berry, nutmeg, Roman chamomile

Wound Healing: Bergamot, blue cypress, blue tansy, cajeput, cistus, clary sage, copaiba, eucalyptus, frankincense, galbanum, geranium, German chamomile, goldenrod, helichrysum, lavandin, marjoram, myrrh, niaouli, palmarosa, patchouli, ravensara, Roman chamomile, rosemary, sage, spike lavender, spikenard, thyme, vetiver, ylang ylang

COPAIBA	●	●	●	●	●	●	●
CORIANDER	●	●	●	■	●	●	●
CYPRESS	●	●	●	■	■	●	●
EUCALYPTUS	■	◇	●	■	■	●	◇
FENNEL	■	■	◇	■	■	●	◇
FRANKINCENSE	●	●	●	■	●	●	●
GALBANUM	●	●	●	●	●	●	●
GERANIUM	●	●	●	■	●	●	●
GERMAN CHAMOMILE	●	●	●	■	■	●	●
GINGER	●	●	●	■	■	■	●
GOLDENROD	●	●	●	●	●	●	●
GRAPEFRUIT	●	●	●	■	●	◇	●
HELICHRYSUM	●	●	●	●	●	●	●
JUNIPER BERRY	●	●	●	■	●	●	●
LAVANDIN	■	■	■	■	■	●	◇
LAVENDER	●	●	●	●	●	●	●
LEMON	●	●	●	●	●	◇	●
LEMON VERBENA	●	●	■	■	●	●	●
LEMONGRASS	●	●	■	■	●	●	●
LIME	●	●	●	■	●	◇	●
MARJORAM	●	●	●	●	●	●	●
MELALEUCA (TEA TREE)	●	●	●	●	●	●	●
MELISSA	●	●	■	■	●	●	●
MYRRH	●	●	◇	●	●	●	●
MYRTLE	●	●	●	■	●	●	◇
NEROLI	●	●	●	●	●	■	●
NIAOULI	■	◇	●	■	●	●	◇
NUTMEG	■	◇	◇	■	●	●	●

ORANGE	●	●	●	●	●	●	●
OREGANO	●	●	◇	■	●	●	●
PALMAROSA	●	●	●	■	●	●	●
PALO SANTO	■	●	●	●	●	●	●
PATCHOULI	●	●	●	■	■	●	●
PEPPERMINT	●	◇	●	■	■	●	●
PETITGRAIN	●	●	●	●	●	■	●
PINE	●	●	●	●	●	●	●
RAVENSARA	◇	◇	■	■	●	●	◇
RAVINTSARA	■	◇	●	■	●	●	◇
ROMAN CHAMOMILE	●	●	●	●	●	●	●
ROSE OTTO	●	●	●	●	●	●	●
ROSEMARY	■	◇	■	■	■	●	◇
SAGE	◇	◇	◇	■	■	●	◇
SANDALWOOD	●	●	●	■	●	●	●
SILVER FIR	●	●	●	●	●	●	●
SPANISH SAGE	■	■	■	■	●	●	◇
SPEARMINT	●	●	●	●	■	●	◇
SPIKE LAVENDER	■	◇	■	■	■	●	◇
SPIKENARD	●	●	●	●	●	●	●
SPRUCE (BLACK)	●	●	●	●	●	●	●
TANGERINE	●	●	●	●	●	■	●
THYME	■	●	●	■	■	●	◇
TSUGA	●	●	●	●	●	●	●
TURMERIC	●	●	●	■	■	●	●
VETIVER	●	●	●	●	●	●	●
WHITE FIR	●	●	●	●	●	●	●

WINTERGREEN	■	◇	◇	◇	◇	●	◇
YLANG YLANG	●	●	●	●	●	●	●
<p><i>Please review the individual essential oil profiles for more detail.</i></p> <ul style="list-style-type: none"> ● Recommended, no known risk ■ Caution warranted ◇ Avoid or great caution warranted 							

APPENDIX E:

CONVERSION CHART, ABBREVIATIONS, AND DEFINITIONS

Depending on the specific gravity of the essential oil the number of drops per milliliter (ml) ranges from 20 to 40. This chart uses an average of 30 drops per ml and 30 milligrams (mg) per drop.

DROPS	ML	MG
1	0.033	30
2	0.066	60
3	0.10	90
4	0.13	120
5	0.17	150
6	0.20	180
7	0.23	210
8	0.26	240
9	0.30	270
10	0.33	300
15	0.50	450
20	0.66	600
25	0.83	750
30	1.0	900
35	1.16	1,050
40	1.32	1,200
45	1.49	1,350
50	1.65	1,500
100	3.30	3,000
150	4.95	4,500
200	6.60	6,000
250	8.25	7,500
300	9.90	9,000
350	11.55	10,500
400	13.20	12,000

450	14.95	13,500
500	16.50	15,000

Symbols and Abbreviations

α	Alpha
β	Beta
γ	Gamma
δ	Delta
ϵ	Epsilon
(E)	Trans, Alpha
(Z)	Cis, Beta
p-	<i>Para</i>
>	More/Greater than
<	Less than
a, a.	Before
a.c.	Before meals
ad lib	As desired
bid	Twice daily
CT	Chemotype
Dx	Diagnosis
g	Grams
g/kg	Grams of administered substance per kilogram (2.2 pounds) of body weight.
gtt	Drop
im	Intramuscular (administered directly into a muscle)
inj.	Injection (administration of a substance into the body either under or through the skin)
ip	Intraperitoneal (administered into the abdominal cavity)
iv	Intravenous (administered into a vein or veins)
lb.	Pound
LC ₅₀	Median lethal concentration. The concentration of a substance that is lethal to 50 percent of the tested population during a toxicity test.
LD ₅₀	Median Lethal Dose. A measurement of acute toxicity that represents the individual dose that is lethal to 50 percent of the tested population.
LD _{LO}	The lowest dose of a substance at which the death of the exposed organism occurs.
μ g,	Micrograms (millionths of a gram)
mcg	
mg	Milligrams (thousandths of a gram)
μ l	Microliters (millionths of a liter)
ml	Milliliters (thousandths of a liter)
mL/Kg	Milliliters of administered substance per kilogram (2.2 pounds) of body weight.
MRSA	Methicillin-resistant <i>Staphylococcus aureus</i> . A strain of staph bacteria that is resistant to common antibiotics.

p or p.	After, per
po	By mouth
prn	As needed
pr, r.	Rectally, per rectum
qid,	Four times per day
Qqds	
q1h	Every hour
q2h	Every 2 hours
q3h	Every 3 hours
q4h	Every 4 hours
q6h	Every 6 hours
q8h	Every 8 hours
q12h	Every 12 hours
qs	As much as needed
RD ₅₀	The exposure concentration of a substance that reduces the respiratory rate of a population by 50 percent.
Rx	Prescription
sc, sq	Subcutaneous. Applied under the skin.
tid, tds	Three times per day

Studies Definitions

Case Report or Series: Collections of reports regarding the treatment of patients (or a single patient) that do not involve a control group.

Case Control: Studies that use existing data to compare people with a specific condition to those who do not have the condition to identify contributing factors or exposures associated with the condition.

Cohort: An observational study that evaluates a group of people over a period of time to determine the effects of particular variables (such as sun exposure) among one group versus another group that has not been exposed to the same variable.

Cross Sectional Surveys: Data collection at a single point in time over a short period to estimate the prevalence of a condition for a specific population. Data can also be used to evaluate the cause of disease or the results of intervention.

Hierarchy of Research Evidence: An approach used to determine the best available evidence and the use of this evidence to establish a recommended approach for the care of individual patients.

***in vitro*:** Studies performed with cells of biological molecules outside a living organism, such as a test tube or culture dish.

***in vivo*:** Studies performed within a living organism or natural setting.

Meta-analysis: A thorough examination of published and valid studies that mathematically combines the results of the individual studies to produce results as if it were one large study.

Randomized Controlled Trial: Studies that evaluate treatments or exposure outcomes in real patients using methodologies that reduce bias and compare treatment versus a control group that is not exposed to the treatment being evaluated in the study.

Systematic Review: The extensive evaluation of published literature to answer a specific clinical question. The literature is critically evaluated for quality according to specific criteria.



HIERARCHY OF RESEARCH EVIDENCE

Base notes contain are the least volatile and contain larger molecules, which take the longest to evaporate—up to days. They are relaxing, sedating, and soothing. Base notes are effective for chronic health conditions. In addition, they affect the spirit and are often used as aphrodisiacs. Typically about 10 to 30 percent of the blend (though this a guideline and not a firm rule for evidence-based aromatherapy).

Middle notes are more volatile and contain medium-sized molecules that are estimated to evaporate in 2 to 48 hours. Middle notes are highly valuable because they aid the function of body systems, help regulate metabolism, and balance the production of hormones by the endocrine system. They are also helpful for regulating the reproductive system. Typically about 30 to 50 percent of the blend (though this a guideline and not a firm rule for evidence-based aromatherapy).

Top notes are highly volatile with very small molecules that are estimated to evaporate in 1 to 24 hours. They strongly influence the mind and emotions, and encourage relaxation, a positive outlook on life, calm anxiety, and help reduce the negative effects of stress. They also affect the body by stimulating circulation and digestion. Top notes are often very effective for acute health conditions. Typically about 15 to 30 percent of the blend (though this a guideline and not a firm rule for evidence-based aromatherapy).

ESSENTIAL OIL NOTES

BASE	BASE/ MIDDLE	MIDDLE	MIDDLE/ TOP	TOP
Copaiba	Cedarwood	Balsam Fir	Basil	Bergamot
Frankincense	Cistus	Blue Spruce	Bay Laurel	Birch
Myrrh	Ginger	Blue Tansy	Black Pepper	Camphor
Sandalwood	Helichrysum	Cajeput	Blue Cypress	Eucalyptus
Spikenard	Ylang Ylang	Cardamom	Citronella	Grapefruit
Turmeric		Carrot Seed	Coriander	Lemon
Vetiver		Cassia	Galbanum	Lemon Verbena
		Cinnamon	Lavandin	Lime
		Clary Sage	Lavender	Orange
		Clove	Lemongrass	Peppermint
		Cypress	Myrtle	Pine
		Fennel	Petitgrain	Sage
		Geranium	Ravensara	Spearmint
		German Chamomile	Rosemary	Tangerine
		Goldenrod	Silver Fir	
		Juniper	Spruce (Black)	
		Marjoram	Thyme	
		Melaleuca (tea tree)	Tsuga	
		Melissa	White Fir	
		Neroli	Wintergreen	
		Niaouli		
		Nutmeg		
		Oregano		
		Palmarosa		

Palo Santo
Patchouli Ravintsara
Roman Chamomile
Rose
Spanish Sage
Spike Lavender

This guide is meant to help quickly identify an essential oil or essential oils that may interact with medications or possibly be contraindicated with certain health conditions. While every effort has been made to identify these interactions and contraindications, it may not list all possible cautions. Always consult your physician or pharmacist before using essential oils with medications or if you have a known health condition, or believe you may have a health condition.

CAUTION	ESSENTIAL OILS
ANEMIA, IRON-DEFICIENCY:	Peppermint, spearmint
ANTIBIOTICS:	Cassia, cinnamon, clove, coriander, fennel, geranium, lemongrass, myrtle, oregano, peppermint, thyme
ANTICHOLINERGIC MEDS:	Thyme
ANTICOAGULANT ANTIPLATELET MEDS (Blood Thinners):	Basil, birch, cassia, cinnamon, clove, cypress, eucalyptus, fennel, German chamomile, ginger, lavandin, lemon verbena, oregano, patchouli, thyme, turmeric, wintergreen; aloe vera gel (oral), [2387] avocado oil (oral), [2388] borage seed oil, [2389] DMSO, [2390] evening primrose oil, [2391] grapeseed oil, [2392] [2393] olive oil (oral) [2394]
ANTIFUNGALS:	Geranium
ASPIRIN:	Basil, birch, cassia, cinnamon, clove, cypress, eucalyptus, fennel, German chamomile, ginger, lavandin, lemon verbena, oregano, patchouli, thyme, turmeric, wintergreen
BARBITUATES:	Bay laurel, cajeput, cardamom, clary sage, eucalyptus, lavandin, myrtle, niaouli, peppermint, ravensara, ravintsara, rosemary, sage, Spanish sage, spike lavender
BLEEDING DISORDERS:	Basil, birch, cassia, cinnamon, clove, cypress, eucalyptus, fennel, German chamomile, ginger, lavandin, lemon verbena, oregano, patchouli, thyme, turmeric, wintergreen; aloe vera gel (oral), [2395] avocado oil (oral), [2396] borage seed oil, [2397] DMSO, [2398] evening primrose oil, [2399] grapeseed oil, [2400] [2401] olive oil (oral) [2402]

**BLOOD PRESSURE
MEDS:**

Basil, bay laurel, birch, black pepper, blue cypress, cassia, cinnamon, citronella, clove, cypress, eucalyptus, fennel, German chamomile, ginger, lavandin, lemon verbena, oregano, patchouli, thyme, turmeric, wintergreen; olive oil (oral)[\[2403\]](#),[\[2404\]](#),[\[2405\]](#)

BROKEN SKIN:

Camphor

CARDIAC DRUGS:

Aloe vera gel (oral)[\[2406\]](#)

CHILDREN:

Bay laurel, birch, blue spruce, cajeput, camphor, cardamom, eucalyptus, fennel, lavandin, niaouli (1,8-cineole, 1,8-cineole/viridiflorol CTs), nutmeg, peppermint, ravensara (all CTs except al[ha-terpinene), ravintsara, rosemary (1,8-cineole, camphor CTs), sage, Spanish sage, spike lavender, wintergreen; borage seed oil

CHOLINERGIC MEDS:

Thyme

CODEINE

Peppermint (very large doses)

**Cytochrome P450 (CYP450)
interference:**

NSAIDs, proton-pump inhibitors, acetaminophen, anti-epileptics, immune modulators, blood sugar medications, blood pressure medications, antidepressants, antipsychotics, diabetic medications, antihistamines, antibiotics, opioids, anesthetics

Balsam fir (low risk), basil, bergamot, black pepper, blue tansy (low risk), cajeput, cardamom, cassia, cinnamon, citronella (low risk), eucalyptus (low risk), fennel, frankincense, geranium, German chamomile, ginger, grapefruit (low risk), lemon verbena, lemongrass, lime, melissa, nutmeg, palmarosa, peppermint, rosemary, sandalwood (Australian), thyme, turmeric; aloe vera gel (oral),[\[2407\]](#) DMSO[\[2408\]](#),[\[2409\]](#)

DIABETIC MEDS:

Basil, cassia, cinnamon, coriander, eucalyptus, fennel, geranium, juniper berry, lemon verbena, lemongrass, melissa, myrtle, oregano, sage, sandalwood (Australian), turmeric; Epsom salts; olive oil (oral),[\[2410\]](#) sunflower oil (oral),[\[2411\]](#) sweet almond oil (oral)[\[2412\]](#)

DIURETIC MEDS:	Juniper berry; aloe vera gel (oral) [2413] , [2414]
DRIVING, OPERATING MACHINERY:	Bay laurel
EPILEPSY	Artemesia, bay laurel, birch, blue spruce, blue tansy, boldo, buchu, cajeput, calamint, camphor, cardamom, eucalyptus, fennel, feverfew, hyssop, genipi, lavandin, mugwort, myrtle, niaouli (1,8-cineole, 1,8-cineole/viridiflorol CTs), pennyroyal, ravensara, ravintsara, rosemary, sage, savin, Spanish sage, spearmint (pulegone-menthone-isomenthone CT), spike lavender, tansy, thuja, thyme, Western red cedar, wintergreen, wormwood; borage seed oil, [2415] , [2416] evening primrose oil [2417]
FLUOROURACIL:	Peppermint
GASTROESOPHAGEAL REFLUX DISEASE (GERD):	Birch, peppermint (low risk), wintergreen
gluten intolerance:	Wheat germ oil [2418] , [2419]
G6PD (Glucose-6-phosphate dehydrogenase deficiency):	Blue spruce, blue tansy (various CTs), camphor (various CTs), cinnamon, lavandin, peppermint, ravintsara (camphor CT), rosemary (various CTs), sage (various CTs), Spanish sage, spearmint (menthone CT—low risk), spike lavender
HORMONE REPLACEMENT THERAPY:	Clary sage
IMMUNOSUPPRESSANTS:	Peppermint; any essential oil that may stimulate the immune system should be used cautiously
IRON DEFICIENCY:	Peppermint, spearmint

LAXATIVES	Aloe vera gel (oral) [2420]
LIVER DISORDERS:	Blue spruce, camphor, lavandin, rosemary (camphor CT), sage, spike lavender
LONG-TERM USE (Toxicity, Other problems):	Birch, wintergreen; borage seed oil, [2421] DMSO
MAO ENZYMES INTERFERES: Hypertension, tremors, confusion, muscle twitching, irritable mood, diarrhea	Basil (estragole CT)
MAOI ANTIDEPRESSANTS:	Clove, nutmeg
MUCOUS MEMBRANE IRRITATION:	Cassia, cinnamon, clove, oregano, peppermint, thyme
ORAL CAUTIONS:	Basil (estragole CT), bay laurel, birch, blue spruce, cajeput, camphor, cardamom, eucalyptus, fennel (methyl chavicol CT), lavandin, niaouli, nutmeg. Palo Santo, ravensara, ravintsara, rosemary (1,8-cineole, camphor CTs), sage, Spanish sage, spike lavender, thyme, wintergreen; kukui nut [2422] , [2423]
PARKINSON'S DISEASE:	Artemesia, bay laurel, birch, blue spruce, blue tansy, boldo, buchu, cajeput, calamint, camphor, cardamom, eucalyptus, fennel, feverfew, hyssop, genipi, lavandin, mugwort, myrtle, niaouli (1,8-cineole, 1,8-cineole/viridiflorol CTs), pennyroyal, ravensara, ravintsara, rosemary, sage, savin, Spanish sage, spearmint (pulegone-menthone-isomenthone CT), spike lavender, tansy, thuja, thyme, Western red cedar, wintergreen, wormwood; borage seed oil, [2424] , [2425] evening primrose oil [2426]
PHOTOSENSITIZING:	Bay laurel (absolute), bergamot, ginger (very, very low risk), grapefruit (mild), lemon, lime, neroli (very low risk), petitgrain (low risk), tangerine (low risk)

PHYTOESTROGENS:

Interact with estrogen receptors, block or mimic estrogen, displace estrogen from cell receptors

Anise (anethole), basil (eugenol), black pepper (eugenol), camphor (eugenol), cardamom—alpha-terpinyl acetate CT (nerol), cassia (eugenol), cinnamon bark (eugenol), citronella (citral, geraniol), clary sage (sclareol), clove (eugenol), fennel (anethole, methyl chavicol), geranium (geraniol), ginger (geraniol), helichrysum (nerol), Himalayan cedarwood—needles (anethole), lemon (citral), lemon verbena (citral, geraniol, nerol), lemongrass (citral, nerol), lime (citral), melissa (citral, geraniol, nerol), neroli (geraniol), palmarosa (geraniol), rose (geraniol, nerol), ravensara (eugenol, methyl chavicol), tangerine (citral, geraniol), and thyme—carvacrol, geraniol, linalool, and thymol CTs (geraniol).[\[2427\]](#)

PREGNANCY & LACTATION:

Anise, bay laurel, basil (methyl chavicol CT), birch, blue cypress, blue spruce, camphor, carrot seed, cassia, cinnamon, citronella, clove, fennel, hyssop, lavandin, lemon myrtle, lemon verbena, lemongrass, melissa, mugwort, myrrh, nutmeg, oregano, parsley seed and leaf, pennyroyal, ravensara, ravintsara (camphor CT), rosemary (1,8-cineole, camphor CTs), rue, sage, Spanish sage, spike lavender, tansy, tarragon, thuja, wintergreen, wormwood; calendula (oral),[\[2428\]](#) borage seed oil (oral),[\[2429\]](#),[\[2430\]](#) evening primrose oil (oral)[\[2431\]](#),[\[2432\]](#)

PROPOLIS ALLERGY:

Beeswax[\[2433\]](#)

PSYCHOTROPIC MEDS:

Nutmeg

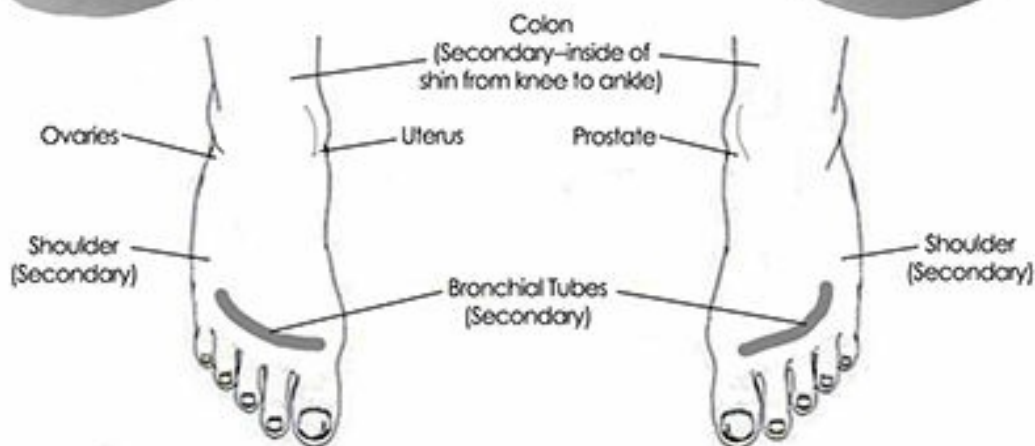
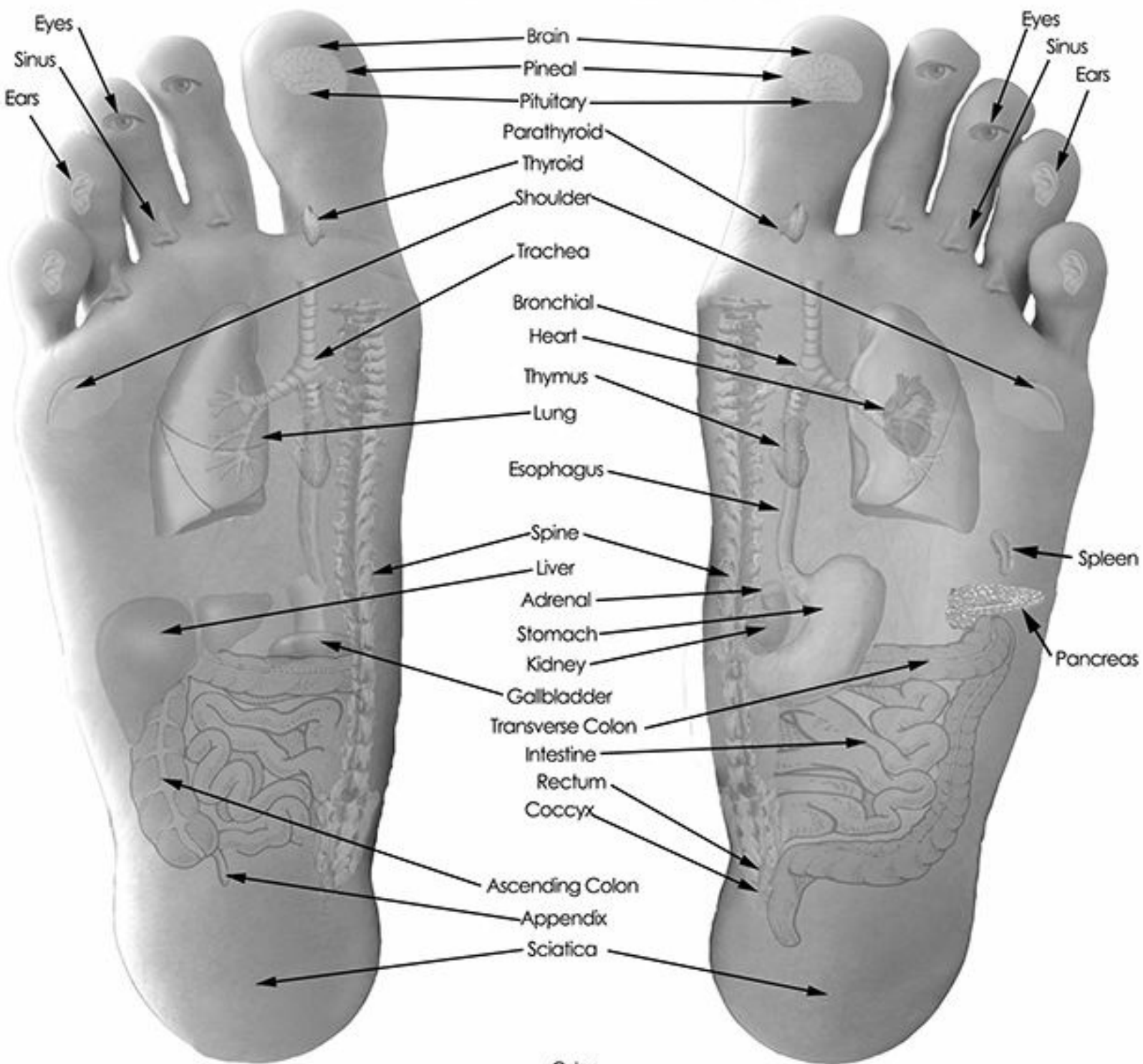
SENSITIZATION TOPICAL APPLICATION - CITRAL, YLANG YLANG)

Citronella, geranium, lemon verbena, lemongrass, melissa, palmarosa, rose, thyme (geraniol, linalool, carvacrol CTs), ylang ylang

VENTRICULAR FIBRILLATION:

Peppermint

Use this chart to apply oils to the feet to support specific organs, body parts, or systems



About the Author:



Dr. Scott A. Johnson is the bestselling author of seven books and more than 250 articles featured in online and print publications. He has a doctorate in naturopathy, is a board-certified alternative medical practitioner (AMP), and a Certified Clinical Master Aromatherapist (CCMA). His evidence-based approach to natural healing and experience conducting medical research make him one of the world's leading experts on the therapeutic application of essential oils. One of his research focuses is the safety of essential oils, and he has published internationally on the subject. Scott draws on his wealth of experience and diverse educational background as he travels the globe to share the secrets of natural healing with those who seek greater wellness.

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