

Clinical Aromatherapy - the Medicinal Value of Volatile Oils

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INTRODUCTION

Volatile oils are complex chemical substances which give scent to the various parts of a plant. On exposure to air or steam they evaporate and are therefore called 'volatile' oils. In times gone by they were considered to embody the *essence* or *etheric* properties of a plant (as opposed to the more mundane properties of air, fire, water and earth also inherent in all living things). They are therefore also known as 'essential' or 'ethereal' oils. On extraction they are usually colourless and lighter than water. In the plant they may occur in *glands* and *glandular hairs* (eg. the Lamiaceae - Thyme, Peppermint, Sage); *oil cells* (eg. the Lauraceae - Cinnamon, Cassia); *oil and resin ducts* (eg. Apiaceae - Cumin, Fennel, Celery and Gymnospermae - Pine, Fir); *oil reservoirs* (eg. citrus - orange, lemon, lime). In living plants volatile oils may act as hormones, insect repellents, growth inhibitors for neighbouring plants, protection against disease or as pheromones to attract insects to the flower for fertilization.

Volatile oils are extremely complex compounds, frequently having two or three hundred constituents. There is usually only a small amount of the volatile oil in a plant, for example, it takes 500 pounds of Sage, Rosemary or Thyme to produce 1 pound of oil, and up to 1 1/2 tons of rose petals to produce 1 pound of oil! (Schnaubelt).

Methods of extraction for volatile oils varies. All medicinal volatile oils are extracted by distillation with the exception of oils of lemon (expressed) and oil of cade (separation) (Trease and Evans, 1989). Water distillation is used for the more robust oils, particularly those high in terpenes. Water and steam distillation is the method most commonly used, being powerful yet gentle for more sensitive constituents. The volatile oils thus distilled float on the surface of the distillate and can be separated easily. Direct steam distillation may be used where the plant is prepared very soon after picking. Volatile oils which are readily soluble in fixed oils so may be extracted by digestion into fats. *Enfleurage* uses cold fats while *maceration* uses hot oils. Both methods require the additional use of alcohol or other solvents to dissolve the volatile oils out of the fixed oils, the alcohol then being evaporated away. *Expression* of oils, as with lemon, involve the use of pressure, rather like cold-pressing of olive oil. *Solvent extraction* involves the use of chemical solvents such as petroleum, acetone or ether. The volatile oils dissolve into the solvent which is then mixed with alcohol to extract the volatile compounds. When the alcohol is evaporated away there may remain in the volatile oil some trace of the solvent so this method is used only for commercial and food grade oils. For clinical aromatherapy the volatile oils produced in this way are not sufficiently pure (Willard 1992).

Because of their scarcity, volatile oils may be extremely expensive and adulteration is common. A good quality essential oil (except the resinous ones) will evaporate completely over time. A simple test for purity is to place a drop onto a sheet of white paper. If a yellowish discolouration remains after some hours then the oil has probably been adulterated with almond or some other fixed oil. This can be confirmed by the feel of a pure versus an adulterated oil. A pure volatile oil is light and non-greasy to the fingers, but a volatile oil adulterated with almond or other vegetable oil will feel greasy.

The very best oils are labelled *genuine and authentic* meaning that they are pure, natural and complete, containing absolutely no fixed vegetable oils or synthetic substances. They have also been distilled at a reduced pressure to assure the highest quality extraction and have not been redistilled (Schnaubelt).

BIOCHEMISTRY OF VOLATILE OILS

Most commonly volatile oils are carbon-hydrogen compounds, often existing in the oxygenated form. The most common hydrocarbon is Terpene, which is built upon to form many different substances including carotenoids, steroids and rubber. Terpenes are formed from *acetyl coenzyme-A* (the end product of glycolysis in the cell) via *mevalonic acid* and *isopentenyl pyrophosphate* (Trease and Evans 1989).

All the terpenes have carbons in multiples of 5 arranged in either the isoprene or isopentane structure.

isoprene

isopentane

This is the skeleton onto which side groups are attached to give rise to the very many different volatile oil compounds. The properties of the volatile oil are determined partly by the number of isoprene units and partly by the different side groupings that may be attached. Some of the side groups that may be associated with the terpene molecules include alcohols, esters, acids, sulphur and nitrogen.

<u>terpene units</u>	<u>C : H ratio</u>	<u>compound name</u>
Monoterpenes	C ₁₀ H ₁₆	volatile oils
Sesquiterpenes	C ₁₅ H ₂₄	volatile oils
Diterpenes	C ₂₀ H ₃₂	resin acids
Triterpenes	C ₃₀ H ₄₈	saponins (steroids)
Polyterpenes	(C ₅ H ₈) _n	rubber, latex
	C ₄₀ H ₆₄	carotenoids

Monoterpenes are thus hydrocarbons consisting of two isoprene units, Sesquiterpenes are hydrocarbons consisting of three isoprene units and so on. Molecules larger than diterpenes do not occur in volatile oils because their molecular weight would be too great to permit distillation to occur. Monoterpenes are the most common type of terpene in volatile oils and may be either cyclic (closed chain) or acyclic (open ended chain). Cyclic Monoterpenes can be mono-cyclic or bi-cyclic and various side chains and may be added to form the alcohols, ketones, aldehydes, esters and so on (Price and Price 1995). Some terpenes also occur in the glycosidal (sugar-linked) form. Thus there are glycosides (*geraniol, nerol & citronellol*) in the petals of some species of Rosa, glucosides and galactosides (*thymol & carvacrol*) in the leaves of Thyme and glucosides (*eugenol, nerol & geraniol*) in the leaves of *Melissa* (Trease and Evans 1989).

Phenylpropanes also occur in volatile oils, derivatives of phenylalanine, tyrosine and cinnamic acid. They are less common than the monoterpenes, but no less significant. *Estragole (methyl chavicol)* in Tarragon and Holy Basil oils, *eugenol* from cloves, *vanillin* from Vanilla, *anethole* from anise, *cinnamaldehyde* in Cinnamon bark, *safrole* from Sassafras, *myristicin* from Nutmeg and *apiole* in Celery seed and Parsley oils are all examples of Phenylpropanes.

The spatial arrangement of the molecules is very significant. All naturally occurring molecules bend light rays, either to the right (dextro-rotatory) or to the left (laevorotatory), and this can have a significant effect on the resulting molecular effects. For example carvone is present in the laevorotatory form in spearmint and in the dextrorotatory form in caraway, giving rise to two markedly different scents.

PROPERTIES EXHIBITED BY ALL THE SIMPLER VOLATILE OILS INCLUDE: (Mills 1986)

* Lipid solubility and therefore easy distribution throughout the body, permitting therapeutic activity in all parts of the body.

* General **antiseptic** effect combined with **leucocytosis** (increase in number of white blood cells). These actions are pronounced in the oils of Eucalyptus and Allium sativum (garlic).

* Stimulation of tissues with which they come into contact. This acts as a **counter-irritant** and **vasodilator**, and when applied topically causes **local anaesthesia** and a **rubefacient** effect.

* Internally, this local tissue stimulation acts on the taste buds to cause a reflex **increase in salivation and gastric secretions**. They also increase peristalsis and improve its co-ordination, thus relieving gas and griping (a **carminative** effect).

* Stimulation of the gut also induces a reflex effect of **cardiac stimulation, peripheral vasodilation and stimulation of respiration**.

Another feature of volatile oils currently being researched is their apparent ability to dissolve into the olfactory bulb on inhalation and thus act directly on the limbic system of the brain. This is the part of the brain that deals with the sense of smell, as well as controlling emotions and feelings. This connection between smell and emotion is part of the logic behind the practice of aromapsychotherapy which utilizes selected volatile oils to affect specific physiological or psychological conditions.

FUNCTIONAL GROUPS FOUND IN VOLATILE OILS AND THEIR GENERAL PROPERTIES

(Schnaubelt)

<u>Group</u>	<u>Effect</u>	<u>Property</u>	<u>Example</u>
Ketones	mucolytic	neuro-toxic	Sage
Aldehydes	calming	irritant	Lemon grass
Esters	balancing	soothing	Lavender
Ethers	balancing	soothing	Tarragon
Alcohols	toning	energizing	Ravensare
Phenols	stimulant	hepato-toxic	Savoury
Terpenes	stimulant	skin irritant	Pine

HYDROCARBON VOLATILE OILS

These are unoxygenated terpenes (ie. they have no added side groups) and are found in practically all volatile oils. They may be Monoterpenes, Sesquiterpenes or diterpenes. Their names usually end in '-ene'.

Monoterpene hydrocarbons

Limonene from citrus rinds, *Carum carvi* (Caraway) and *Melissa off.* (Lemon balm) is the most common monoterpene hydrocarbon but others include *pinene* from *Pinus* spp. (Pine), *Angelica archangelica* (Angelica) & *Myristica fragrans* (Nutmeg), *zingiberene* from Ginger and *phellandrene* from *Foeniculum vulgare* (Fennel) & *Eucalyptus* spp. and *alpha terpene* (from *Elletaria cardamomum* (Cardomom) & *Oregano off.* (Marjoram) (Willard 1992). All the citrus family, with the exception of Bergamot, are extraordinarily rich in monoterpene hydrocarbons.

Monoterpene hydrocarbons exhibit electro-positivity and are non-polar. As such they are associated with the following therapeutic properties: external antiseptics, anti-viral action, mucus membrane irritants and possibly some immuno-stimulatory actions internally (Schnaubelt).

Sesquiterpene hydrocarbons

There are various chemical configurations within this grouping but all exhibit electronegativity and a non-polar nature and therefore are used therapeutically as anti-inflammatories, sedatives, anti-spasmodics, anti-allergens and decongestants (anti-phlogistics). *Humulene* from *Humulus lupulus* (Hops) and *chamazulene* from Chamomile are examples of sesquiterpene hydrocarbons.

Diterpenes

These are expectorant, anti-fungal and anti-viral. Some are purgative when taken internally and some may influence the hormonal system eg. *Sclareol* in *Salvia sclarea* and *viridiflorol* in *Melaleuca viridiflora*.

ALCOHOL VOLATILE OILS

These are terpenes (mono-, sesqui- or di- terpenes) with an attached hydroxyl (OH) grouping. They are mildly electro-positive and thus generally antiseptic, stimulating and energizing (Schnaubelt). They are usually non-irritating to the skin and non-toxic. Their names usually end in '-ol'.

Monoterpene alcohols

These have a strongly polar nature and are electro-positive. Thus they are used for their antiseptic, diuretic, heart toning and immune stimulating effects (Schnaubelt). They are much valued for their bactericidal effect and are well tolerated in skin and personal care items.

Mentha piperita (Peppermint) is a plant with a singular amount of a monoterpene alcohol (*menthol*) in its volatile oil. It is used to cool irritated skin conditions (refrigerant effect), as a carminative, antiseptic, decongestant and stimulant. It is especially active against the influenza and herpes simplex viruses (Willard 1992).

Linalol which is found especially in *Lavandula spica* (Spike Lavender), *Coriandrum sativum* (Coriander), *Rosmarinus officinalis* (Rosemary) *Citrus aurantium* (Petitgrain) and *Aniba rosaeodora* (Rosewood) is notably sedative, an effect not generally found with other terpene alcohols (Schnaubelt).

Sesquiterpene alcohols

The therapeutic properties of this group are very varied and there is much research still to be done into this chemical group. In general the sesquiterpene alcohols are slightly less electropositive than are the monoterpene alcohols and exhibit the properties of liver and glandular stimulation, anti-inflammatory and anti-allergenic action and decongestant (Schnaubelt).

Some interesting sesquiterpene alcohols include *alpha santalol* from *Santalum album* (Sandalwood) which finds therapeutic use as a urinary disinfectant and immune stimulant; and *bisabolol* from *Chamomilla recutita* (German chamomile). Bisabolol is one of the strongest anti-inflammatories and decongestants found in volatile oils and occurs in at least 4 different chemotypes (Schnaubelt). Other plants with a high proportion of sesquiterpene alcohols include *Melaleuca quinquenervia* (chemotype nerolidol) (Niaouli), *Vetiver zizanoides* (Vetiver) and *Zingiber officinalis* (Ginger).

ALDEHYDE VOLATILE OILS

These contain a non-cyclic carbon double bonded to an oxygen molecule as well as bonded to a hydrogen molecule (Willard 1992). They are strongly electronegative and of almost neutral polarity. Thus they exhibit the qualities of being anti-inflammatory, sedative, soothing and calming (Schnaubelt). They are hypotensive, vasodilatory and antipyretic. A particular property of the aldehyde volatile oils is their insect repellent activity. They tend to have a very strong scent and be especially useful in perfumery. They are often quite irritating to the skin. Their names usually end in '-al'.

Herbs that contain terpene aldehydes include *Melissa officinalis* (Lemon balm), *Eucalyptus citriodora* (Eucalyptus), *Cinnamomum spp.* (Cinnamon), *Citrus limon* (Lemon peel), *Cymbopogon citratus* (Lemon grass) and *Lippia citriodora* (Lemon verbena). Research has demonstrated increased efficacy of the sedative and soothing action with smaller doses of these oils.

KETONE VOLATILE OILS

These are characterised by a side group formed from oxygen double bonded to carbon (a carboxyl group). Ketone volatile oils are moderately electronegative and strongly polar. Thus they exhibit the general characteristics of being cooling and drying. They also tend to promote tissue growth and healing of injuries (Schnaubelt). Ketones tend to be lipolytic, mucolytic, sedative, analgesic, anti-coagulant, anti-inflammatory, digestive tonic, expectorant and stimulant. They should be avoided during pregnancy (Price and Price 1995).

They may be divided into 2 categories:

- 1) Monocyclic **menthone** from *Mentha pulegium* (Pennyroyal) & *Mentha piperita* (Peppermint)
carvone from *Mentha spicata* (Spearmint) & *Carum carvi* (Caraway)
pulegone from *Mentha pulegium*
diosphenone from *Barosma betulina* (Buchu)
- 2) Dicyclic **2 camphenone** from *Cinnamomum camphora* (Camphor)
thujone from *Artemisia absinthium* (Wormwood), *Salvia officinalis* (Sage),
Tanacetum vulgare (Tansy) & *Thuja occidentalis* (Arbor vitae) (Willard 1992).

Some ketone volatile oil molecules are neurotoxic, especially *thujone*. This is a major component of the volatile oil of *Artemisia absinthium* (Wormwood) which is used to make the alcoholic liqueur 'absinthe' There

is substantial evidence now that regular consumption of this drink causes brain damage. Thujone also occurs in significant amounts in *Thuja occidentalis* (Arbor vitae) and *Salvia officinalis* (Sage). In Sage, thujone comprises 30% of the volatile oil and acts as a smooth muscle stimulator. This combined with its marked estrogenic effects makes it definitely contra-indicated in pregnancy (Mills 1986)

Camphor is obtained from the plant *Cinnamomum camphora*, or is synthesized from turpentine. It may also occur in some members of the Compositae and Lamiaceae families. It acts directly on the brain as a central nervous stimulant and can be used to counteract the respiratory depression that can accompany morphine or barbiturate use. When camphor is inhaled it stimulates mucous flow, and so is useful in the treatment of chronic catarrh and respiratory tract infections (Mills 1986)

PHENOL VOLATILE OILS

These are structurally similar to the alcohol volatile oils in that they have an OH side group (and their names usually end in '-ol'), but in the case of the phenols the basic molecule contains a benzene ring (ie. the isoprene unit acquires an extra carbon molecule and become cyclic as a benzene ring). Phenol volatile oils are strongly electro-positive and are often quite polar. As such they are found to be stimulating and warming, tonifying, strongly antibacterial and anti viral, immune stimulating and keratolytic/vesicant to mucous membranes and skin (Schnaubelt).

Some of the most important phenol volatile oils are *thymol* from *Thymus vulgaris* (Thyme), *carvacrol* from *Pinus* spp. (Pine) & *Juniperus communis* (Juniper) and *eugenol* from *Eugenia caryophyllata* (Cloves). There is a slight liver toxicity associated with phenol compounds so they should be avoided in long term use and in people with compromised liver function.

Phenolic ethers are more complex phenolic molecules. They may occur in the *cis* or the *trans* form, with differing toxicity accordingly. Overall, they tend to be more toxic than simple phenols and should generally be avoided. They include safrole from *Sassafras* and asarone from *calamus*.

OTHER VOLATILE OIL GROUPINGS

Ethers

Here oxygen is not integrated into a ring structure but forms the link between two 2 carbon chains. They tend to exhibit mild electro-positivity and neutral polarity. They are used therapeutically for their balancing and soothing effect. Examples include *anethole* from *Pimpinella anisum* (Anise) and *methylchavicol* from *Ocimum basilicum* (Basil) and *Artemisia dracunculus* (Tarragon).

Esters

These are common in many volatile oils and frequently serve to enhance the power of the smell of the oil. They are formed by the reaction between an acid and an alcohol in the volatile oil. Generally esters are mildly electro-negative and have neutral polarity. They exhibit a spasmolytic and soothing effect via a CNS reaction and are anti-inflammatory and fungicidal (Schnaubelt). The volatile oil of *Pelargonium odorantissimum* (Geranium) is particularly anti fungal while other significant examples of ester volatile oils include lavender, Clary sage, Petitgrain, Bergamot, Juniper, Roman chamomile and Elecampane.

Sesquiterpene lactones

A compound is called a 'lactone' if it contains an ester group integrated into a carbon ring system. The sesquiterpene (15 carbon) lactones are found to have very strongly mucolytic effect as well as being decongestant and anti-inflammatory (Schnaubelt). In the Asteraceae (Dandelion) family the sesquiterpene lactones have been found to exhibit significant anti-tumour effects, possibly by a form of natural chemotherapy. *Inula helenium* (Elecampane) is a good example of a volatile oil notably high in sesquiterpene lactones.

Oxides

The only oxide of note that has been discovered is *1,8-cineole*, otherwise known as *eucalyptol*. It occurs abundantly in *Eucalyptus* spp. and *Melaleuca* spp. and is a powerful expectorant and anti-viral, and slightly irritant to the skin. .

SUMMARY OF CHEMICAL CONSTITUENTS AND ACTIONS

Aldehydes (strongly electro-negative, moderately polar)

Sedative, anti-inflammatory, anti-viral, cooling, soothing and relaxing.

E.g. Helichrysum, Melissa, Lemon grass, Thuja, Sage, Cumin, Hyssop, Verbena, E. Citriodora

Ketones (moderately electro-negative, strongly polar)

Cell regenerative, mucolytic, drying, tonifying, potentially neurotoxic.

E.g. Pennyroyal, Peppermint, Caraway, Wormwood, Sage, Thuja, Tansy, Camphor, Buchu

Esters (electrically neutral and of medium polarity)

Spasmolytic, fungicidal, soothing to the skin, anti-inflammatory.

E.g. Geranium, Lavender, Clary sage, Petigrain, Bergamot, Roman chamomile, Inula

Monoterpene hydrocarbons (strongly electro-positive and non-polar)

Anti-viral, stimulating, irritant, drying, immuno-stimulatory.

Eg. Citrus and evergreen needle oils, Angelica, Nutmeg, Fennel, Oregano

Phenylpropanes (moderately electro-positive and moderately polar)

Stimulating, and anti-bacterial.

E.g. Basil, Tarragon, Nutmeg, Parsley, Anise, Cinnamon and Cloves

Sesquiterpene (strongly electro-negative, of variable polarity)

Hepatic and glandular stimulants, anti-inflammatory and anti-allergic, decongestant.

Eg. Sandalwood, Chamomile

CHEMOTYPES IN VOLATILE OILS

Plants which are botanically related, either by family or even genus, frequently exhibit similar medicinal value. Thus, for example, most members of the Apiaceae are rich in volatile oils with strong carminative and warming properties. However, the converse may also be true to the extent that sometimes even plants of the same species may have different therapeutic effects according to their unique biochemical individuality. This is called the *chemotype* of the plant or *chemical polymorphism*. Two important examples of the significance of chemotypes are Rosemary and Thyme.

Rosmarinus officinalis

Chemotype

Camphor - Borneol

(France, Spain, Yugoslavia)

Action in the body

General stimulant and energiser.

1,8 Cineole

(Italy, Tunisia, Morocco)

Facilitates elimination from the liver, lungs & kidneys, reduces congestion.

Verbenon

(France)

Digestive stimulant, liver and gall bladder tonic

Thymus vulgaris

Chemotype

Linalol, CT I

Action in the body

Antibacterial, anti-inflammatory.

Geraniol, CT II

Mildly antibacterial.

Thujanol-4, CT III

Strongly antibacterial and antiviral.

Terpenyl acetate, CT IV

Antibacterial.

Thymol, CT V

Keratolytic, anti-neoplastic.

Carvacrol, CT VI

Strongly antibacterial and antiviral, stimulant and warming.

Different chemotypes may arise within a species because of geographic, climatic or agricultural differences. For example, the chemical composition of Rosemary varies significantly according to how close to the sea it grows. Chemotypes can be encouraged to breed true by careful farming practices (pollination and cloning) and this is commercially useful because many purchasers wish to know the chemotype they are buying.

USING ESSENTIAL OILS

Caution!

Always research your oils before use. Some oils are much stronger than others. Eg. Thyme, Orange or Basil oils may cause skin irritation in quite small amounts. If in doubt try out just a little bit first on the wrist, cover with a band aid and wait an hour then observe for redness, heat or irritation. If none occurs it is safe for topical use in a diluted form. For babies, children up to 14 years, the elderly, pregnant women or people with serious medical conditions, special considerations are advised for choosing oils, dilution rates and methods of application. A consultation with a qualified aromatherapist is advised in these special circumstances.

Dilution rates for normal, healthy adults

Massage or body oil

Use 10 - 15 drop per oz. (30 mL) of carrier oil. Do not shower off the oils afterwards, allow them to remain on the skin for better penetration. Essential oils can take 6 - 12 hours to fully penetrate the skin.

Bath

Use 4 - 10 drops of a blend of oils per tub of water. Add just before getting in and agitate to disperse. You can also put the oils into almond or another carrier oil to make a more moisturizing bath. Use about 4 - 10 drops essential oil in ½ oz. carrier oil per bath. For real luxury add about 4 - 10 drops of essential oils to 1 pint of fresh, full fat milk and pour this into a bath. Avoid Rosemary, Eucalyptus, Fennel or other highly stimulating oils if you suffer from high blood pressure or seizure disorders.

Inhalation

Use 2 - 4 drops of essential oils in a bowl of hot water. Place a towel over your head and, keeping the eyes closed, inhale the steam. Be careful because the oils are extremely strong when used in the way. Continue inhaling deeply for 5 - 10 minutes then place the bowl of water and oil near a radiator so that the oils continue to evaporate into the air. Avoid Rosemary, Eucalyptus, Fennel or other highly stimulating oils if you suffer from high blood pressure or seizure disorders.

Sitz bath

Use 2 -3 drops of essential oil per pint of warm water and soak for 20 minutes in a large basin or small tub filled to cover the hips and pelvis. An excellent way to treat genito-urinary conditions.

Hand or foot soak

Use 3 - 5 drops of essential oil per pint of warm water. Soak for 15 - 20 minutes.

Facial oil

Use 5 - 10 drops of essential oil per 1 oz of Jojoba or Hazelnut oil. This can be used as a cleanser or a moisturizer.

Facial compress

Use 2 - 5 drops of essential oil in a bowl of warm water. Wring out a washcloth in the water and apply to face. Repeat several times. Alternatively simply splash the face with the water, being sure not to get in the eyes.

Body compress

Use 3 - 6 drops of essential oil in a bowl of water. Warm compresses can be used for muscle stiffness and to increase local blood flow. Cool compresses can be used to reduce irritation and inflammation.

Air freshener

Use in a diffusor or put 20 - 30 drops of essential oils in 1 oz vodka, shake well and add 4 oz. water. Use this in a spray bottle as a mister.

THE ESSENTIAL OILS

Aniseed (*Pimpinella anisum*) Spain

Warm, pleasant and sweet. Increases breast milk, calming, antispasmodic. Carminative and stimulating to the digestive system. Circulatory tonic. Expectorant. Reputed to be an aphrodisiac. Avoid long term use.

Basil: (*Ocimum basilicum - var methyl chavicol*) India ☼ ●

Clears the head, enhances mental clarity, memory and concentration. For nausea and indigestion. Regulates adrenal function.

Benzoin: (*Styrax benzoin*) Sumatra

Warming and decongestant for the lungs. Relaxing agent for nervous tension and stress. Good for eczema and dry skin. Extremely thick and goey. Natural preservative.

Bergamot: (*Citrus bergamia - FCF*) Italy ☼

Uplifting and refreshing. Anti-inflammatory, antiseptic, immune enhancing, analgesic. Used for cold sores and depression. A flavouring in Earl Grey Tea.

Birch (Sweet): (*Betula lenta*) USA

Circulatory stimulant, warming, pain relieving. For arthritis and rheumatism. Also a skin softener and prevents dandruff.

Black Pepper: (*Piper nigrum*) Madagascar ■

Stimulant, energizing, warming, circulatory stimulant, antispasmodic, carminative.

Cajeput: (*Melaleuca cajuputi*) Indonesia ■

Antiseptic, warming, circulatory stimulant. Used in liniments. Powerful germicide. Used in inhalations for colds and respiratory infections.

Camphor: (*Cinnamomum camphora*) China ●

Analgesic, disinfectant, anti-depressant, anti-inflammatory and soothing to the skin.

Cardamom: (*Elletaria cardamomum*) India

Disinfectant, uplifting, refreshing, wonderful fragrance. Carminative, antispasmodic. Reputed to be an aphrodisiac. Culinary use.

Carrot Seed: (*Daucus carota*) France ●

Relaxing, carminative, soothing. Stimulates liver function. Circulatory stimulant. Nourishing for dry and aging skin, reduces wrinkles.

Cedar wood: (*Juniperus virginiana*) USA ●

Insect repellent, astringent, antiseptic, mucolytic/anticatarrhal. Known to repel moths.

German Chamomile: (*Matricaria recutita*) Egypt

Roman Chamomile: (*Chamaemelum nobile*) England

Soothing, relaxing, anti-inflammatory, analgesic. Reduces allergies. Used in stress, anxiety and poor sleep. Lightens hair when added to shampoos.

Cinnamon leaf: (*Cinnamomum zeylanicum*) Sri Lanka

Antiseptic, warming. Stimulant for the circulatory system. Relieves menstrual cramps. Good for weakness and debility.

Cistus (Rock rose): (*Cistus ladaniferus*) Spain

To promote lymphatic function and fight infection. Reduces wrinkles. Sedative.

Citronella: (*Cymbopogon nardus*) Vietnam

Insect repellent. Slightly disinfectant.

Clary Sage: (*Salvia sclarea*) Russia ●

Sedative, hormonal balancer, soothing, relaxing. Reduces menstrual cramps, PMS and menopausal hot flashes. Adrenal stimulant. Used for anxiety states, panic attacks and paranoia. Rejuvenates skin cells, calms the complexion and reduces dandruff.

Clove: (*Eugenia caryophyllata*) Madagascar ● ■

Warming and stimulating, antiseptic, analgesic, anti-parasitic, anti-fungal. Traditional for toothache applications. Repels moths.

Cypress: (*Cupressus sempervirens*) Spain ♥

Anti-rheumatic, cleansing, mucolytic/anti-catarhal. Healing and balancing to the reproductive system, used for PMS, menopause and menstrua disturbances. Stimulates circulation. Used for varicose veins and haemorrhoids. Aids lymphatic drainage. Reduces oiliness of skin.

Elemi: (*Canarium luzonicum*) Phillippines

Antiseptic, good for dry skin, expectorant. Used for nervous exhaustion and stress. Fresh, spicy woody perfume.

Eucalyptus: (*Eucalyptus globulus*) China

Cooling, anti-bacterial and anti-viral in the lungs. Decongestant to clear head colds and reduce mucus congestion.

Fennel: (*Foeniculum vulgare var dulce*) Hungary ■ ● ⚙

Digestive stimulant, stimulates milk flow, adrenal function and lymphatic drainage. Reduces water retention and aids in obesity. Carminative for gas, nausea and indigestion.

Frankincense: (*Boswellia carteri*) Somalia

Calming, anti-inflammatory, antiseptic. Nourishes dry and aging skin. Promotes menstruation.

Geranium (Rose geranium): (*Pelargonium graveolens*) China

Soothing, sedative, healing to the skin. Adrenal tonic and hormonal normaliser. Relieves depression, anxiety and despondency.

Ginger: (*Zingiber officinalis*) China

Warming, digestive stimulant, carminative for gas, nausea and indigestion. Enhances pelvic circulation, relieves pelvic congestion. Anti-parasitic.

Grapefruit: (*Citrus paradisi*) USA ✨

Depurative for oily skin, promotes lymphatic drainage and toxin removal. Reduces cellulite.

Helichrysum (Immortelle): (*Helichrysum italicum*) Corsica

The best oil for treating scars and aiding skin healing. Also for bacterial infections, muscular aching, rheumatism and depression. Reduces bruising. Also known as Everlasting.

Ho leaf: (*Cinnamomum camphora*) China

Oil may be extracted from leaf or wood. An eco-friendly alternative to Rosewood. Same tree that yields Camphor essential oil from the bark.

Jasmine absolute: (*Jasminum grandiflorum*) India

Relaxing, calming, aphrodisiac. Reduces anxiety, stress, nervous tension, depression, lethargy, anger and indifference. For dry and aging skins.

Juniper Berry: (*Juniperus communis*) Eastern Europe ● ♥

Antiseptic, cleansing, promotes mental clarity, stimulates lymphatic drainage. Avoid in cases of kidney disease.

Kanuka: (*Kunzea ericoides*) New Zealand

Used much like Tea tree oil with marked anti-microbial properties.

Laurel: (*Laurus nobilis*) Hungary

Analgesic, antiseptic, stimulant. Lymphatic drainage. Repels insects, soothes itching.

Lavender: (*Lavandula vera*) France

Soothes burns, and skin irritations. Calming and relaxing - good for insomnia, depression, anxiety, irritability and headaches. Anti-microbial for bacterial, viral or fungal infections. Skin regenerator and healer, reduces wrinkles and scarring.

Lemon: (*Citrus limon*) Italy ✨

Refreshing, cooling, depurative. Anti-oxidant and preservative. Anti-viral and anti-bacterial. Reduces lymphatic congestion.

Lemon grass: (*Cymbopogon citratus*) Guatemala ■

Insect repellent, often combined with Citronella. Revitalizing action, used for fatigue, depression and jet lag. Antiseptic, used to treat acne and skin infections. Stimulates hair growth.

Lime: (*Citrus aurantifolia*) Mexico ✨

Uplifting, stimulating, refreshing.

Mandarin: (*Citrus reticulata*) Italy

Relaxing and calming. Carminative and liver tonic. Reduces stretch marks and scars.

Manuka: (*Leptospermum scoparium*) New Zealand
Disinfectant, anti-fungal, aids immune system.

Marjoram: (*Origanum marjorana*) Egypt ●
Soothing and calming. Analgesic and antispasmodic, used for menstrual cramps. Regulates blood pressure. Anti-viral and immune boosting.

Melissa type: (*Nature identical blend*) ■
Calming yet uplifting. Regulates menstrual cycle. Carminative. Insect repellent. Active against the herpes virus.

Myrrh: (*Commiphora myrrha*) Somalia ●
Reduces wrinkling, antiseptic and anti-fungal. Heavy warm base note.

Myrtle: (*Myrtis communis*) Tunisia
Cleansing and purifying, used for acne and oily skin. Decongestant for catarrh. Promotes restful sleep. Antispasmodic.

Neroli: (*Citrus aurantium*) Egypt
Relaxing and meditative aid, tranquillizing action, relieves anxiety and tension. Used on mature or reddened skin as well as for stretch marks and thread veins.

Niaouli (ct linalol): (*Melaleuca quinquenervia*) Australia
Antiseptic, reduces allergies, relieves coughs. Good for a variety of infections including acne, cuts, burns and insect bites. Warming and stimulating. Gentle enough to use on children and the elderly.

Orange (bitter): (*Citrus aurantium*) Ivory Coast ⚙
Nice in men colognes and after-shaves. Sunny, fresh smell. Relieves stress and nervous tension. Relaxing, calming and up-lifting.

Orange (sweet): (*Citrus sinensis*) Italy ⚙
Antidepressant, encourages positive outlook. Good for oily skin. Promotes immune function.

Palmarosa: (*Cymbopogon martini var motia*) India
Calming, refreshing and clarifying. Nourishing to the skin, promotes skin healing, regulates oiliness.

Patchouli: (*Pogostemon cablin*) Indonesia
Tissue regenerator, closes pores, deodorant. Stimulant and tonic. Repels moths and other pests.

Peppermint: (*Mentha piperita*) USA ● ■
Stimulating to a tired brain. Good for headaches. Carminative for gas, indigestion and nausea. Takes the itch out of insect bites, chickenpox, shingles and fungal infections.

Petit grain: (*Citrus aurantium*) Italy
Refreshing and uplifting. Good for stress and anxiety. Reduces skin blemishes.

Peru Balsam: (*Myroxylon balsamum*) USA

Warming, stimulating, anti-microbial, antiseptic. Decongestant and anticatarrhal. For dry and chapped skin.

Pine Needle: (*Pinus sylvestris*) Hungary

Disinfectant, expectorant. Good air antiseptic. Circulatory stimulant. Refreshing and uplifting. Relieves muscular pain. Adrenal stimulant.

Ravensara: (*Ravensara aromatica*) Madagascar

A warming, stimulating anti-microbial and nasal decongestant. Relieves muscle fatigue.

Rose absolute: (*Rosa damascena*) Morocco

Relaxing, powerful astringent, antidepressant. Increases sperm count. Regulates menstrual cycle. Aphrodisiac. Rejuvenates skin cells.

Rosemary: (*Rosmarinus officinalis*) Spain ● ♥

Aids memory, mental fatigue & concentration. Relieves muscle stiffness and aching. Great for dark hair and to reduce dandruff.

Rosewood: (*Aniba roseodora*) Brazil

Balances emotions. Immune stimulant. Restores libido. Rejuvenates skin cells.

Sage Dalmatian: (*Salvia officinalis*) Hungary ♥ ●

Cleansing and purifying. Balances women's hormones and reduces breast milk. Mucolytic / anti-catarrhal. Reduces perspiration and oiliness of skin. Encourages hair growth. Excellent in a foot bath for tired, aching and sweaty feet.

Sandalwood: (*Santalum album*) India

Calming, grounding and clearing. Aphrodisiac. Reduces rashes and skin inflammations. Good for dry skin. Excellent for genito-urinary problems. Sustainably harvested from cultivated trees.

Spearmint: (*Mentha spicata*) China

Cooling, anti-inflammatory, good for migraines and itchy skin conditions. Mental stimulant. Carminative for digestive upsets, gas and bloating.

Spikenard: (*Nardostachys grandiflora*) India

Sedative and relaxant. Used for nervous indigestion and palpitations. Good for dry or mature skin and reduces dandruff.

Tagettes: (*Tageta glandulifera*) Zimbabwe ⚙

Anti-microbial for skin infections especially fungal. Promotes mental clarity. Use in low dilutions and for short periods of time - very powerful oil.

Tangerine: (*Citrus reticulata*) USA ⚙

Muscle relaxant, sedative, calming. Reduces stretch marks.

Tea Tree: (*Melaleuca alternifolia*) Australia

An effective antiseptic, anti-viral and anti-fungal. Immune tonic. Protects the skin from radiation burns during cancer treatments.

Thyme: (*Thymus vulgaris*) Spain ■ ● ♥

Anti-viral, topical application for warts. Anti-bacterial, anti-viral and anti-parasitic. Raises the spirits.

Valerian Root: (*Valeriana officinalis*) UK

Calming, good for insomnia.

Vanilla: (*Fragrance oil*)

Sensual, warm, aphrodisiac.

Verbena: (*Nature identical blend*)

Uplifting, fresh, light, refreshing.

Vetivert: (*Vetivera zizanoides*) Indonesia

Relieves muscular pain and stiffness. Circulatory stimulant. Liver tonic. Calming for stress and tension. Thought to create harmony at home.

Yarrow: (*Achillea millefolium*) Bulgaria ⚙

Anti-inflammatory, soothing, healing. Regulates menstrual cycle.

Ylang-Ylang (extra): (*Chananga odorata genuina*) Madagascar

Sedative and anti-spasmodic. Relaxes body, mind and spirit. Alleviates anger and frustration. Anti-depressant, aphrodisiac. This is the first distillation and very powerful.

- ♥ **Avoid in hypertension**
- **May cause skin irritation**
- **Avoid in pregnancy**
- ⚙ **May cause sun sensitivity**

TOXICOLOGY OF ESSENTIAL OILS

'Babysafe' essential oils

These are often rich in terpene alcohols and esters and are generally safe for long term use.

Carrot seed	Geranium	Palma rosa	Sandalwood
Clary sage	German chamomile	Patchouli	Tea tree
Coriander	Lavender	Peppermint	Ylang ylang
Cypress	Marjoram	Petigrain	
Eucalyptus spp.	Myrrh	Roman chamomile	
Frankincense	Neroli	Rose	

Generally safe essential oils

Can be safely used in small amounts for specific conditions for prescribed periods of time. May occasionally be slightly irritant to the skin (eg Lemon grass) and citrus oils may cause photosensitivity and skin irritation. Any oil rich in phenols should not be used in high doses or for long periods of time.

Allspice	Fennel	Orange
Angelica	Fir	Oregano
Bay laurel	Helichrysum	Pine
Bergamot	Hyssop	Sage
Black pepper	Juniper	Savoury
Camphor	Lemon verbena	Spruce
Caraway	Lemon grass	Thyme
Cedarwood	Lime	Yarrow
Celery	Melissa	
Dill	Mugwort	

Safe when used appropriately

These oils should never be used undiluted and internal use should not be attempted except by experienced practitioners.

Anise	Cinnamon	Parsley	Wintergreen
Basil	Clove	Tarragon	
Birch	Nutmeg	Thyme	

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