Perfumes and flavoring agents

PERFUMES- The substance which is made from natural, syntheticcombination , employed for creating pleasant odour. e.g. sandalwood oil

FLAVORING AGENT- The substances which are used to give flavor tothe pharmaceutical formulations. e.g. lemon oil , rose oil, peppermint oil

PEPPERMINT OIL

Synonym Brandy Mint.

Botanical Source

It is the oil obtained by the distillation of *Mentha piperita*, belonging to family Labiatae.

Geographical Source

It is mainly found in Europe, United States, and also in damp places of England.

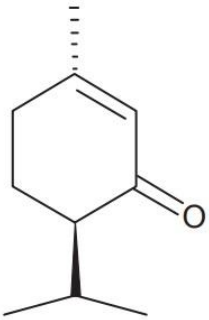
Characteristics

The leaves are shortly and distinctly stalked, 2 inches long and 3/4 to 1.5 inches broad. The margins are finely toothed, with smooth upper and lower surfaces The stems are 2 to 4 feet high, frequently purplish in colour. The flowers are reddish-violet in colour, present in the axils of the upper leaves, forming loose, interrupted spikes. The plant has a characteristic odour and if applied to the tongue has a hot, aromatic taste at first and afterwards produces a sensation of cold in the mouth caused by menthol present in it. Oil is colourless, yellowish or greenish liquid, with penetrating odour and a burning, camphorescent taste. On storage it becomes thick and reddish but increases the mellowness even if it is stored for 14 years.

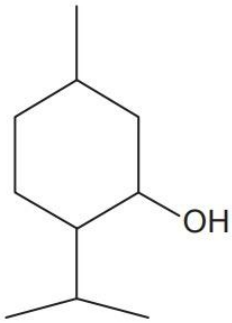
Mentha piperita

Chemical Constituents

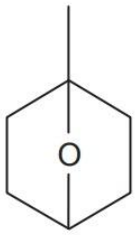
The chief constituent of Peppermint oil is Menthol, along with other constituents like menthyl acetate, isovalerate, menthone, cineol, inactive pinene, limonene, and other less important bodies. Menthol separates on cooling it to a low temperature (–22°C). The flavouring properties of the oil are due to both the ester and alcoholic constituents, whereas the medicinal value is attributed only due to the alcoholic components. The English oil contains 60 to 70% of Menthol, the Japanese oil containing 85%, and the American has only about 50%.



(+)-Menthone



Menthol



Cineole

Uses

It is stimulant, stomachic, carminative, inflatulence, and colic; in some dyspepsia, sudden pains, for cramp in the abdomen and also in cholera and diarrhoea. Oil of peppermint allays sickness and nausea, as infants cordial. Peppermint is good to aid in raising internal heat and inducing perspiration. It is also used in cases of hysteria and nervous disorders.

Adulterants

Camphor oil, Cedarwood oil, and oil of African Copaiba are occasionally used as an adulterant of Peppermint oil, the oil is also adulterated with one-third part of rectified spirit. If adulterated with rectified spirit it can be identified by agitating it with water which produces milkiness. Rosemary oil and Turpentine oil are also sometimes used as adulterants.

Marketed Products

It is one of the ingredients of the preparation known as Dabur lal tooth powder (Dabur).

LEMON OIL

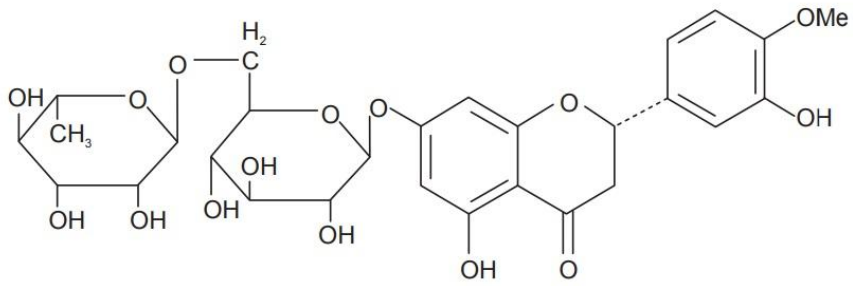
Synonym
Fructus Limonis.

Biological Source
Lemon peel is obtained from the fresh ripe fruit of *Citrus limon* (L.) Burm. f. (C *medico* var. *limon* Linn.), belonging to family Rutaceae.

Geographical Source
It is cultivated in California. West Indies, Italy, Spain, Sicily, Portugal, Florida, California, Jamaica, and Australia; grown all over India, particularly in home gardens and small-sized orchards.

Chemical Constituents
Lemon peel contains volatile oil (2.5%), vitamin C, hesperidin and other flavone glycosides, mucilage, pectin and calcium oxalate. The important constituents of the volatile oil are limonene (90%), citronellal, geranyl acetate, α-pinene, camphene, linalool, terpineol, methyl heptenone, octyl and nonyl aldehydes, γ-terpinene, β-pinene, neral, and geranial.

The peels also contain flavonoids eriocitrin, epigenin, luteolin, chrysoeriol, quercetin, isorhamnetin, limocitrin, limocitrol, isolimocitrol, hesperidin; coumarins scopoletin and umbelliferone; sinapic acid and β-coumaric acid.



Hesperidin

Uses
Lemon peel is used as a flavouring agent, perfumery, stomachic, and carminative. The oil, externally, is a strong rubefacient and if taken internally in small doses has stimulating and carminative properties.

Marketed Products
It is one of the ingredients of the preparations known as Protein shampoo (Himalaya Drug Company), Panch Nimba churna (Zaipa Pharmaceuticals), and Ultra Doux conditioner (Garnier).

ORANGE OIL

Synonyms

Citrus vulgaris, Citrus bigaradia, Citrus aurantium amara, Biga-rade orange, Bitter orange, Seville orange, (Sweet) Portugal orange, China orange, *Citrus dulcis,* Cortex aurantii amar L, Seville orange peel.

Biological Sources

The orange peel is the fresh or dried outer part of the pericarp of *Citrus aurantium* Linn, belonging to family Rutaceae.

Geographical Source

It is mainly cultivated in India, China, Spain, Madeira, Sicily, Malla, and Morocco.

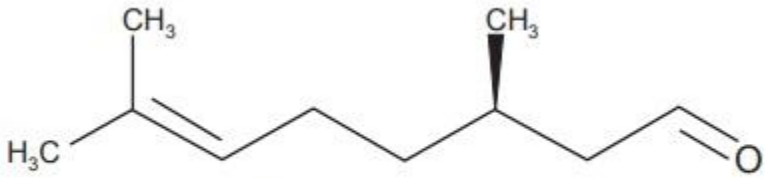
Characteristics

It is a small tree with a smooth, greyish brown bark and branches that spread into a regular hemisphere. The leaves are oval, alternate, evergreen, size ranging from 3 to 4 inches long, rarely with a spine in the axil. They are glossy, dark green on the upper surface, and lighter beneath. The calyx is cup-shaped and the thick, fleshy petals, five in number, are intensely white and curl back. The fruit is earth-shaped, a little rougher and darker than the common, sweet orange: the flowers are more strongly scented, and the glands in the rind are concave instead of convex. The dried peel is brittle and hard, dark orange red in colour, the surface is rough with oil glands which are slightly raised. The inner surface is yellowish white with pithy on them. It has an aromatic odour, bitter and aromatic taste. The oil of Bitter Orange Peel is pale yellow liquid; it is soluble in four volumes of alcohol. Neutral to litmus paper and specific gravity at 25°C is 0.842 to 0.848.

Citrus aurantium

Chemical Constituents

Bitter orange peel contains of 1 to 2.5% volatile oil. The principle component of volatile oil is 90% limonene and small quantities of aldehydes citral, citronellal, bitter amorphous glycoside like aurantiamarin and it's acid; hesperidin, isohesperidin, vitamin C, and Pectin.



Citronellal

Uses

It is used as aromatic, stomachic, carminative, and flavouring agent, it is used particularly in fish liver oil preparations and liver extract. The oil is used chiefly as a flavouring agent, used in the oil of turpentine in chronic bronchitis. It is nonirritant to the kidneys and pleasant to take.

Marketed Products

It is one of the ingredients of the preparations known as Dabur Vatika Body and Bounce Shampoo (Dabur).

LEMONGRASS OIL

Synonyms

East India lemongrass, Malabar, or Cochin Lemongrass.

Biological Source

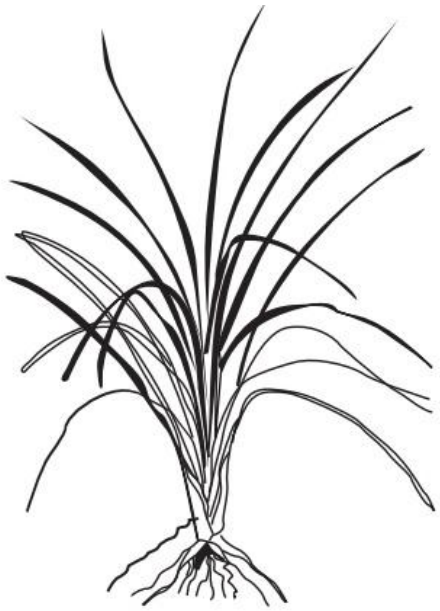
Lemongrass oil is obtained form *Cymbopogon flexuosus* Stapf. (syn. *Andropogon nardus* var. *flexuosus* Hack.), belonging to family Poaceae. It contains not less than 75% of aldehydes calculated as citral.

Geographical Source

Lemongrass is indigenous to India and is found in Tin-nevelli, Travancore, and Cochin. Two principal varieties of Lemongrass are recognized as the red-stemmed variety, the true *C. flexuosus*, which is a source of East Indian Lemongrass oil and the white-stemmed variety which is designated as *C. flexuosus* var. *albescens*. The oil from the latter is low in aldehyde content and is slightly soluble in 70% alcohol.

Characteristics

A light-coloured oil, rich in citral content, is obtained by steam distillation. The yield varies form 0.25 to 0.5% per acre.

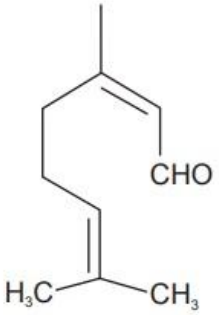


Cymbopogon flexuosus

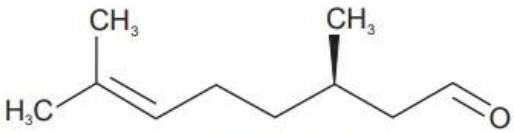
Chemical Constituents

Lemongrass oil is the principal source of citral (68–85%) from which ionone is derived. The oil also contains methyl heptanone, decyl aldehyde, geraniol, linalool, limonene, dipentene, citronellal, triacontane, triacontanol, intermedeol, isointermedeol, α- and β-pinene, car-3-ene, myrcene, ocimene, β-phellandrene, α-terpinene, p-cymene, terpi-nolene, methyl heptenone, geranyl acetate, β-caryophyllene, β-selinene, β-, γ- and δ-elemenes, α- and β-bisabolene, α-

curcumene, γ- and δ-cadinene, methyl eugenol, elemol, β -caryophyllene oxide, eugenol, β-eudesmol, elemicin, farnesol, juniper-camphor, geraniol, anisaldehyde, terpinen-4-ol, α - and β-terpineol, and borneol.



Citral



Citronellal

Uses

The oil is used in perfumery, soaps, and cosmetics and as a mosquito repellent. Lonones obtained from citral are required for synthetic violet perfumes.

Marketed Products

It is one of the ingredients of the preparation known as Sage lion balm (Sage Herbals).

SANDALWOOD OIL

Synonyms
Chandan oil, sandal oil, yellow sandalwood oil, liginum.

Biological Source
Sandalwood oil is obtained by distillation of sandalwood, *Santalum album* Linn., belonging to family Santalaceae.

Geographical Source
Sandal is a small to medium-sized, evergreen semiparasitic tree found in the dry regions of peninsular India from Vindhya Mountains southwards, especially in Mysore and Tamil Nadu. It has also been introduced in Rajasthan, parts of U.P., M.P., and Orissa.

Cultivation
Sandal tree grows mostly on red, ferruginous loam overlying metamorphic rocks, chiefly gneiss, and tolerates shallow, rocky ground and stony or gravelly soils, avoiding saline and calcareous situations. It is not found on the black-cotton soil. The growth is luxuriant on rich and fairly moist soils, such as garden loam and on well-drained deep alluvium along the river banks, but the heartwood from these trees is deficient in oil. The trees grown on poor soils, particularly on stony or gravelly soil, produce more highly scented wood, giving a better yield of the oil.

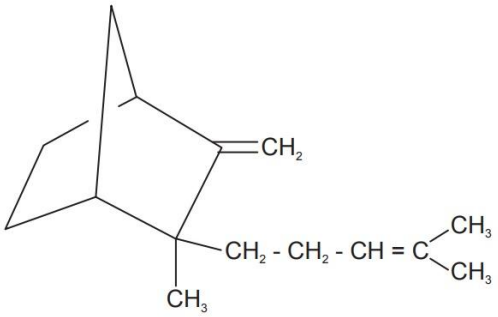
It reproduces from seeds dispersed by birds. Germination is profuse in the forests immediately after the monsoons. For artificial regeneration, it is necessary to provide suitable climatic and ecological conditions. For procuring seeds, the fruits are collected during January–March. Germination is up to 80%. Just after the first monsoon showers, the sandal seeds are dibbed and protected by thorny bushes. The seeds germinate in about 8–14 days. The seedlings grow rapidly, that is, up to 20–30 cm high, at the end of the first year.

Characteristics
Sandalwood oil is viscous, yellowish liquid having a peculiar, heavy, sweet, and very lasting odour. It has sp. gr. 0.97–0.98, viscosity 1.5 and acid value 0.5–0.8.

Santalum album

Chemical Constituents

The main odorous and medicinal constituent of Sandal-wood is santalol. This primary sesquiterpene alcohol forms more than 90% of the oil and is present as a mixture of two isomers, α-santalol and β-santalol, the former predominating. The other constituents reported are hydrocarbons santene, nor-tricycloekasantalene, α-, and β- santalenes.



β-Santalol

Uses

Sandalwood oil is highly used in perfumery creations and finds an important place in soaps, face creams, and toilet powders. A chemo-protective action on liver carcinogenesis in mice has been demonstrated.

Substitutes and Adulterants

Oil from several plant sources are either used as substitutes for or as adulterants of natural sandalwood oil. Oil obtained from the Australian plant *Fusanus spicatus (Eucarya spicata)* is used as a substitute for genuine Sandalwood oil. Wood and oil of *Santalum yasi* have a feeble odour which is not deli-cate like that of Indian Sandalwood oil. East Africa markets the wood and oil derived from *Osyris tenuifolia,* the wood is similar to sandal and is used as an adulterant. An oil from Mauritius possesses most of the characteristics of the Indian oil. In West Indies, oil derived from *Amyris balsamifera* Linn. is marketed as a cheap substitute for Indian sandalwood oil. In India, the wood of *Erythroxylum monogynum* Roxb. is used as an adulterant. The wood of *Mansonia gagei* Drum, resembles sandalwood closely in its physical and other characteristics. Another species, which is common in southern India and used as an adulterant, is *Ximenia americana* Linn. The oil is adulterated with polyethylene glycols.

Marketed Products

It is one of the ingredients of the preparations known as Abana, Evecare, Lukol, Antiwrinkle cream (Himalaya Drug Company) and Mahamarichadi tail, Brahma rasayan (Dabur).