



Volatile oils

Mentha, Clove, Cinnamon, Fennel, Coriander

Presented By;-

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Volatile Oils

Volatile oils are natural, oily substances obtained from plants that evaporate easily when exposed to air and usually have a strong characteristic smell. They are also called essential oils.

Examples of volatile oils:- Mentha, Clove, Cinnamon, Fennel, Coriander

Mentha



Mentha

Mentha (Peppermint) is the dried or fresh leaves and flowering tops of *Mentha × piperita* L., belonging to the family **Lamiaceae**, containing volatile oil rich in **menthol**, and used as a carminative, flavouring agent, and antispasmodic.

Biological Source

- ❑ **Scientific Name:** *Mentha × piperita* L.
- ❑ **Family:** Lamiaceae (Labiatae)
- ❑ **Common Names:** Peppermint, Pudina (Hindi)
- ❑ **Geographical Source:** Mentha is cultivated in: India (Uttar Pradesh, Punjab, Haryana) United States, China



Chemical Constituents

1. **Menthol (Major constituent)**
2. Menthone
3. Menthyl acetate
4. Menthofuran
5. Limonene
6. Cineole
7. Pulegone (trace)

Commercial Applications

S.NO	Commercial Product	Active Constituent(s)	Uses
1	Peppermint Oil	Menthol, Menthone	Used as a carminative, digestive aid, and flavouring agent.
2	Menthol Crystals	Menthol	Used in cough drops, inhalers, pain-relief balms, and ointments.
3	Toothpaste	Menthol, Peppermint oil	Freshens breath and promotes oral hygiene.
4	Mouthwash	Menthol, Peppermint oil	Provides antiseptic action and freshens breath.
5	Cough Syrups & Lozenges	Menthol	Relieves cough, sore throat, and nasal congestion.
6	Pain Relief Balm	Menthol	Provides cooling effect and relieves muscle and joint pain.
7	Chewing Gum & Confectionery	Peppermint oil, Menthol	Used as a natural flavouring and cooling agent.
8	Herbal Tea	Peppermint leaves (Menthol)	Used to improve digestion and relieve stomach discomfort.



Therapeutic Uses

1. **Carminative** – Relieves indigestion and flatulence.
2. **Antispasmodic** – Reduces stomach and intestinal cramps.
3. **Digestive** – Improves digestion and stimulates appetite.
4. **Decongestant** – Helps relieve nasal congestion and cough.
5. **Flavouring Agent** – Used in medicines, toothpaste, mouthwash, and confectionery for its cooling and refreshing effect.

Clove



Clove

Clove consists of the **dried unopened flower buds** of *Syzygium aromaticum* (L.) Merr. & L.M. Perry, belonging to the *Myrtaceae* family. It is valued for its **eugenol-rich volatile oil** and is widely used as an antiseptic, analgesic, flavouring, and carminative.

Biological Source

- ❑ **Scientific Name:** *Syzygium aromaticum* (L.) Merr. & L.M. Perry
- ❑ **Family:** Myrtaceae
- ❑ **Common Name:** Clove (Laung)
- ❑ **Geographical Source:** India (Tamil Nadu, Kerala, Karnataka), Sri Lanka, Indonesia



Chemical Constituents

1. **Eugenol** (Major active constituent)
2. Eugenyl acetate
3. β -Caryophyllene
4. α -Humulene
5. Methyl salicylate (trace amount)
6. Oleanolic acid
7. Crategolic acid

Commercial Applications

S.NO	Commercial Product	Active Constituent(s)	Uses
1	Clove Oil	Eugenol	Used as an antiseptic, analgesic, and dental pain reliever.
2	Dental Cement	Eugenol	Used in temporary dental fillings and root canal procedures.
3	Toothpaste	Eugenol, Clove oil	Maintains oral hygiene and relieves tooth sensitivity.
4	Mouthwash	Eugenol	Freshens breath and provides antiseptic action.
5	Cough Lozenges	Clove oil, Eugenol	Relieves sore throat and cough.
6	Herbal Toothache Drops	Eugenol	Provides quick relief from toothache.
7	Spice Powder	Clove buds	Used as a flavouring agent in foods and beverages.
8	Ayurvedic Formulations	Clove oil, Eugenol	Used for digestive disorders, cough, and oral care.



Therapeutic Uses

1. **Analgesic** – Relieves toothache and dental pain.
2. **Antiseptic** – Prevents microbial infections.
3. **Carminative** – Relieves indigestion and flatulence.
4. **Antioxidant** – Protects cells from oxidative damage.
5. **Flavouring Agent** – Used in foods, beverages, and pharmaceutical preparations.

Cinnamon



Cinnamon

Cinnamon consists of the **dried inner bark** of *Cinnamomum verum* J. Presl (syn. *Cinnamomum zeylanicum*), belonging to the **Lauraceae** family. It is valued for its **cinnamaldehyde-rich volatile oil** and is widely used as a flavouring agent, carminative, and antimicrobial drug.

Biological Source

- ❑ **Scientific Name:** *Cinnamomum verum* J. Presl (Syn. *Cinnamomum zeylanicum*)
- ❑ **Family:** Lauraceae
- ❑ **Common Name:** Cinnamon (Dalchini)
- ❑ **Geographical Source:** India (Kerala, Tamil Nadu), Sri Lanka (major producer), Madagascar



Chemical Constituents

Cinnamaldehyde (60–80% of cinnamon bark oil) is the principal active constituent responsible for the characteristic aroma and most of the pharmacological activities.

1. **Cinnamaldehyde** (*Major active constituent*)
2. Eugenol
3. Cinnamic acid
4. Cinnamyl acetate
5. Linalool

Commercial Applications

S.NO	Commercial Product	Active Constituent(s)	Uses
1	Cinnamon Oil	Cinnamaldehyde, Eugenol	Used as an antimicrobial and flavouring agent.
2	Toothpaste	Cinnamaldehyde, Eugenol	Promotes oral hygiene and freshens breath.
3	Mouthwash	Cinnamaldehyde	Provides antiseptic action and freshens breath.
4	Herbal Capsules	Cinnamon extract	Used to support digestion and general wellness.
5	Cough Syrups	Cinnamon oil	Used in cough and cold preparations.
6	Bakery Products	Cinnamon powder	Natural flavouring and aroma enhancer.
7	Tea & Beverages	Cinnamon bark	Used as a spice and digestive aid.
8	Ayurvedic Formulations	Cinnamon bark extract	Used for digestive disorders and respiratory ailments.



Therapeutic Uses

1. **Carminative** – Relieves indigestion and flatulence.
2. **Antimicrobial** – Inhibits bacterial and fungal growth.
3. **Antioxidant** – Protects cells from oxidative damage.
4. **Anti-inflammatory** – Reduces inflammation.
5. **Flavouring Agent** – Used in foods, beverages, and pharmaceutical preparations.

Fennel



Fennel

Fennel consists of the **dried ripe fruits (commonly called seeds)** of *Foeniculum vulgare* Mill., belonging to the **Apiaceae (Umbelliferae)** family. It is valued for its **anethole-rich volatile oil** and is widely used as a **carminative, digestive, flavouring, and expectorant**.

Biological Source

- ❑ **Scientific Name:** *Foeniculum vulgare* Mill.
- ❑ **Family:** Apiaceae (Umbelliferae)
- ❑ **Common Name:** Fennel (Saunf)
- ❑ **Geographical Source:** India (Rajasthan, Gujarat, Uttar Pradesh), Egypt, Italy, China



Anethole (50–80% of fennel essential oil) is the principal active constituent responsible for the characteristic sweet aroma and medicinal properties

1. **Anethole** (Major active constituent)
2. Fenchone
3. Estragole (Methyl chavicol)
4. Limonene
5. α -Pinene
6. Camphene

Commercial Applications

S.NO	Commercial Product	Active Constituent(s)	Uses
1	Fennel Oil	Anethole, Fenchone	Used as a carminative and flavouring agent.
2	Herbal Tea	Anethole	Improves digestion and relieves bloating.
3	Cough Syrup	Anethole	Acts as an expectorant and relieves cough.
4	Digestive Tablets	Fennel extract	Relieves indigestion and flatulence.
5	Mouth Freshener (Saunf)	Anethole	Freshens breath and aids digestion.
6	Toothpaste	Fennel oil	Improves oral hygiene and provides pleasant flavour.
7	Confectionery Products	Fennel oil	Used as a natural flavouring agent.
8	Ayurvedic Formulations	Fennel extract	Used for digestive and respiratory disorders.



Therapeutic Uses

1. **Carminative** – Relieves flatulence and indigestion.
2. **Digestive** – Improves digestion and stimulates appetite.
3. **Expectorant** – Helps relieve cough and bronchitis.
4. **Antispasmodic** – Reduces gastrointestinal cramps.
5. **Flavouring Agent** – Used in foods, beverages, and pharmaceutical preparations.

Coriander



Coriander

Coriander consists of the **dried ripe fruits** of *Coriandrum sativum* L., belonging to the **Apiaceae (Umbelliferae)** family. It is valued for its **linalool-rich volatile oil** and is widely used as a **carminative, digestive, flavouring, and antimicrobial agent**.

Biological Source

- ❑ **Scientific Name:** *Coriandrum sativum* L.
- ❑ **Family:** Apiaceae (Umbelliferae)
- ❑ **Common Name:** Coriander (Dhania)
- ❑ **Geographical Source;** India (Rajasthan, Madhya Pradesh, Gujarat), Russia, Morocco, China.

Chemical Constituents

Linalool (Coriandrol) (approximately **60–70% of coriander essential oil**) is the principal active constituent responsible for its characteristic aroma and pharmacological activities.

1. **Linalool (Coriandrol)** (*Major active constituent*)
2. **α -Pinene**
3. **γ -Terpinene**
4. **Camphor**
5. **Geraniol**
6. **Limonene**

Commercial Applications

S.NO	Commercial Product	Active Constituent(s)	Uses
1	Coriander Oil	Linalool, α -Pinene	Used as a flavouring agent and digestive aid.
2	Herbal Tea	Linalool	Relieves indigestion and bloating.
3	Digestive Tablets	Coriander extract	Used for flatulence and dyspepsia.
4	Spice Powder	Coriander fruits	Used as a natural flavouring in foods.
5	Pickles & Condiments	Coriander fruits	Enhances flavour and aroma.
6	Perfumes & Cosmetics	Linalool	Used as a fragrance ingredient.
7	Essential Oil	Linalool	Used in aromatherapy and pharmaceutical preparations.
8	Ayurvedic Formulations	Coriander extract	Used for digestive and gastrointestinal disorders.



Therapeutic Uses

1. **Carminative** – Relieves flatulence and indigestion.
2. **Digestive** – Improves digestion and stimulates appetite.
3. **Antimicrobial** – Inhibits bacterial and fungal growth.
4. **Antispasmodic** – Relieves gastrointestinal cramps.
5. **Flavouring Agent** – Used in foods, beverages, and pharmaceutical formulations.

Tannins

Tannins are naturally occurring substances found in many plants. They are polyphenolic compounds that have an astringent (puckering or drying) taste and can bind with proteins.

Simple example

When you drink **strong tea**, you may feel dryness or roughness in your mouth. This is partly due to **tannins present in tea**.

Catechu



Catechu

Catechu is the dried aqueous extract obtained from the **heartwood of Acacia catechu Willd.**, belonging to the family **Fabaceae (Leguminosae)**. It is rich in **tannins and catechin** and is mainly used as an **astringent**.

Biological Source

- ❑ **Plant:** Acacia catechu Willd.
- ❑ **Family:** Fabaceae
- ❑ **Common name:** Black catechu / Cutch
- ❑ **Hindi:** Khair
- ❑ **Geographical Source:** Catechu is mainly obtained from India, Nepal, Bangladesh, Pakistan, Sri Lanka.

Chemical Constituents

1. Catechin
2. Catechutannic acid
3. Epicatechin
4. Quercetin
5. Phlobatannins
6. Tannins

Commercial Applications

S.NO	Commercial Product	Active Constituents	Uses
1	Catechu Extract	Catechin, tannins	Astringent preparations
2	Mouthwash	Catechin, tannins	Oral hygiene and gum care
3	Tooth powder	Tannins, catechin	Gum and dental care
4	Herbal formulations	Catechin, catechutannic acid	Diarrhoea and oral disorders
5	Pan preparations	Catechu extract	Flavour, colour and astringent effect
6	Tanning preparations	Tannins	Leather tanning



Therapeutic Uses

1. **Astringent** – Reduces excessive secretions.
2. **Antidiarrhoeal** – Used traditionally in diarrhoea.
3. **Oral care** – Used in mouth ulcers and gum disorders.
4. **Anti-inflammatory** – Helps reduce inflammation.
5. **Wound care** – Used as an astringent for minor wounds.

Pterocarpus



Pterocarpus

Pterocarpus consists of the dried **kino (oleo-gum-resin/exudate)** obtained from the **heartwood of Pterocarpus marsupium Roxb.**, belonging to the family **Fabaceae (Leguminosae)**. It is rich in **tannins and flavonoids** and is traditionally used as an **astringent**.

Biological Source

- ❑ **Scientific name:** Pterocarpus marsupium Roxb.
- ❑ **Family:** Fabaceae
- ❑ **Common name:** Indian Kino / Vijaysar
- ❑ **Geographical Source:** India, mainly Madhya Pradesh, Maharashtra, Karnataka, Kerala, and Tamil Nadu.

Chemical Constituents

1. Pterostilbene
2. Marsupsin
3. Pterosupin
4. (-)-Epicatechin
5. Tannins
6. Gallic acid

Commercial Applications

S.NO	Commercial Product	Active Constituent(s)	Uses
1	Kino extract	Tannins, Kinotannic acid	Astringent preparations
2	Herbal antidiabetic formulations	Pterostilbene, Epicatechin	Blood-glucose management
3	Dental/oral preparations	Tannins, Catechin	Gum and oral care
4	Herbal digestive preparations	Tannins	Diarrhoea and intestinal disorders
5	Ayurvedic formulations	Pterostilbene, Marsupsin	Traditional metabolic and inflammatory conditions



Therapeutic Uses

1. **Astringent** – Helps reduce excessive secretions.
2. **Antidiabetic** – Traditionally used to support blood-glucose control.
3. **Antidiarrhoeal** – Used traditionally for diarrhoea.
4. **Anti-inflammatory** – Helps reduce inflammation.
5. **Wound care** – Traditionally used for minor wounds and ulcers.