

Volatile Oils

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Volatile Oils

- Possess characteristic odor, have high refractive index.
- Mostly optically active.
- Secreted in special structures such as duct, cell, schizogenous or lysigenous glands, trichomes, etc.
- Commonly found in Labiatae, Rutaceae, Piperaceae, Zingiberaceae, Umbelliferae, Myrtaceae and Lauraceae.
- Extracted by steam-distillation, solvent extraction or mechanical means like ecuelle & enfleurage techniques.

Volatile Oils

- **Hydro-distillation method:** water distillation, water and steam distillation, and steam distillation.
- Used for extraction of volatile oil from herbal drugs.
- Fresh material- subjected to hydro-distillation- leaf drugs.
- Air-dried parts extracted -steam distillation.
- **Effleurage method :** Used for extraction of delicate perfumes.
- Fresh flower petals- mechanically spread on layer of fatty material, allowed to imbibe & exhausted petals replaced by fresh material.
- Process continued till fatty layer is saturated with volatile principles, then extracted with lipid solvent.

Types of volatile oils

Type	Examples
1. Alcohol volatile oils	Peppermint, cardamom, coriander, orange flower oil, rose oil, sandalwood
2. Aldehyde volatile oils	Cinnamon, lemon peel, orange peel, citronella oil, lemon-grass, bitter almond
3. Ester volatile oils	Gaultheria, lavender, mustard
4. Hydrocarbon volatile oils	Turpentine, black pepper
5. Ketone volatile oils	Caraway, spearmint, buchu, camphor, musk, civet oil
6. Oxide volatile oils	Chenopodium, eucalyptus
7. Phenolic ether volatile oils	Anise, fennel, nutmeg
8. Phenol volatile oils	Clove, thyme, creosote

Uses of Volatile oils

- Flavouring and perfuming agents in pharmaceutical formulations, foods, beverages and cosmetics.
- Also used as medicinal agents - carminatives (umbelliferous fruits, cinnamon, etc.), anthelmintics (chinopodium), diuretic (Juniper), antiseptic (eucalyptus), counter-irritant (oil of wintergreen), local anaesthetic (clove), sedative (jatamansi), local irritant (turpentine)
- Citronella oil -insect repellent, lemon-grass oil for citral content, & for synthesis of vitamin A.
- Terpeneless oils are valuable perfuming and flavouring agents.

Uses of Volatile oils

- Terpeneless volatile oils - gets more price in perfumery industry, better specificity and stability.
- Processed by removing hydrocarbons and undesired components by fractional distillation and other techniques.
- Used in mfg. of high priced cosmetics and perfumes.
During 1993-94 and 1994-95, India's total exports of volatile oil were Rs 3407.2 and Rs. 4426.3 lakhs, respectively.

Chemical tests for Volatile Oils

1. Thin section of the drug, + alcoholic solution of Sudan III. Red colour obtained by globules
2. Thin section of the drug, + drop of tincture alkane. Red color

Occurrence of terpenoids

Volatile oils	Terpenoids present
Caraway oil	carvone, and limonene
Citronella oil	geraniol, citronellal, farnesol
Eucalyptus oil	cineole
Geranium oil	geraniol
Peppermint oil	menthol
Ginger oil	zingiberene
Fennel oil	anethol
Sandalwood oil	santalol
Clove oil	eugenol