

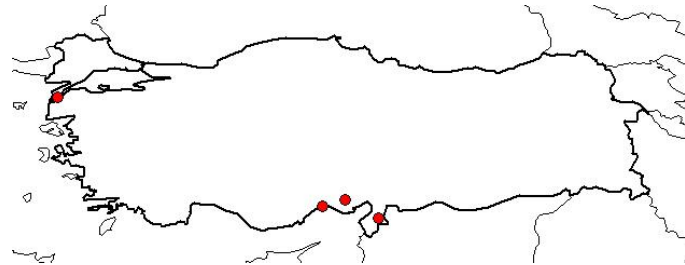
FOLIA ROSMARINI

Rosmarinus officinalis (Lamiaceae) leaves.

Grows naturally in Mediterranean region, from Spain to Anatolia.

Cultivated in Europe.

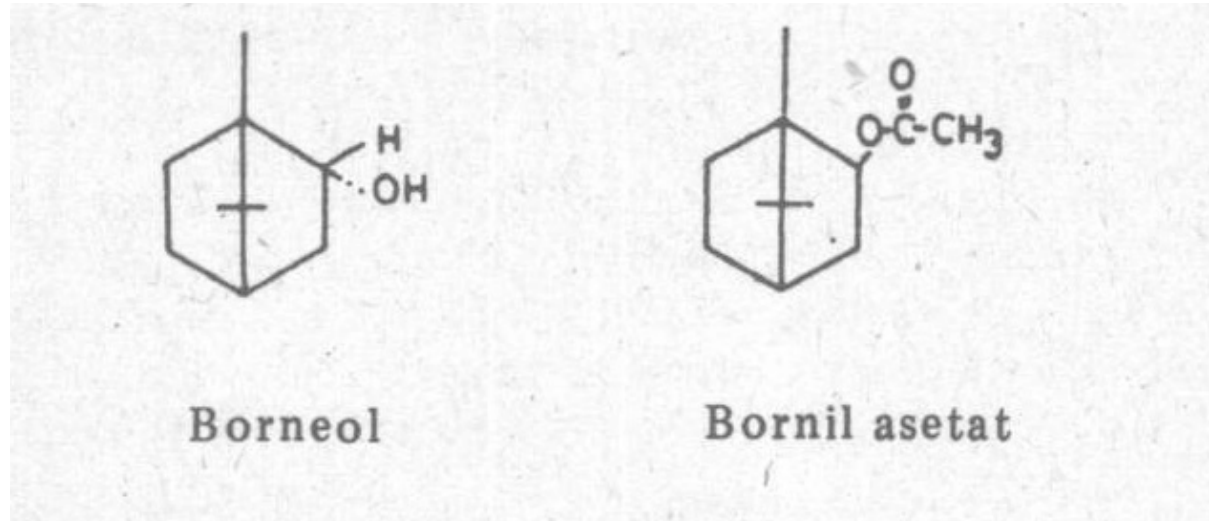
Ornamental plant, decorative.



Hydrodistillation of leaves yield 1-2% essential oil.

20% of oil is **borneol** and **bornyl acetate**.

5% camphor.



R. officinalis is a good rosmarinic acid source.

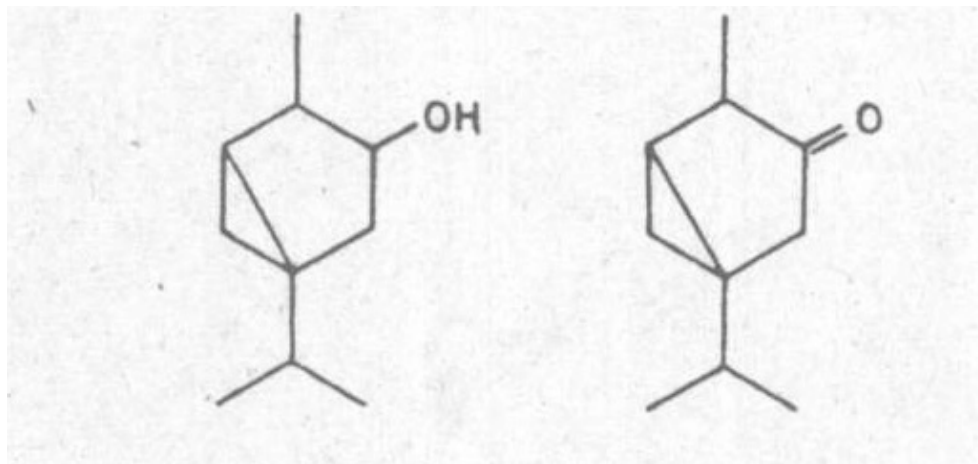
Served with meat as a food.

Antioxidant and antimicrobial properties.



HERBA ABSINTHII

- ***Artemisia absinthium***, aerial parts.
- It grows in South Europe, North Africa, Anatolia, it is a Mediterranean plant.
- Essential oil yield of the capitulum is 0.5%, the colour of the essential oil is blue-green. 30-45 % of the essential oil is tujone, and 15-25% is tujole. The other constituents are pinene, phellandrene, and cadinene.

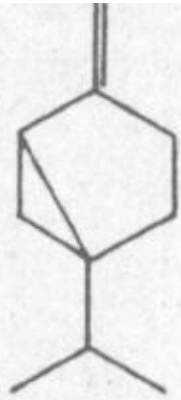


- Tujone and tujole are toxic compounds.
- Appetizer due to its bitter taste, wound healing effect, used against allergy.

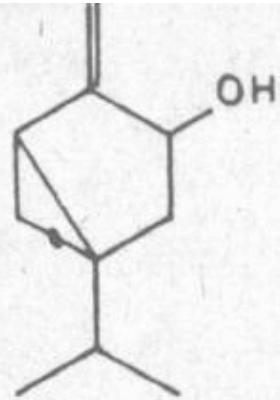
OLEUM SABINAE



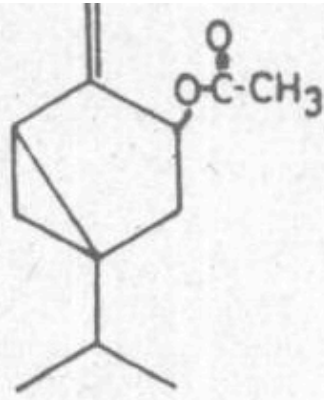
- *Juniperus sabina* grows mainly in central Europe.
- Hydrodistillation of leafy branches.
- Essential oil yield is 2-3%.
- 40-50% of essential oil is sabinol acetate, and 10% sabinol. The other constituents are terpineol, cadinen, geraniol, citronellol, pinene and sabinene.
- The essential oil is toxic and should not be used internally, mostly it is used externally for HPV infections and used as hair growing agent.



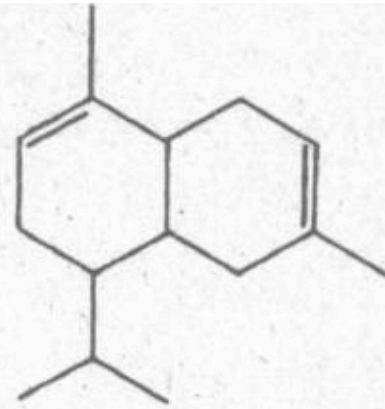
Sabinen



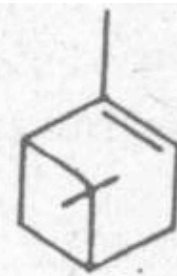
Sabinol



Sabinol aetat



Kadinen

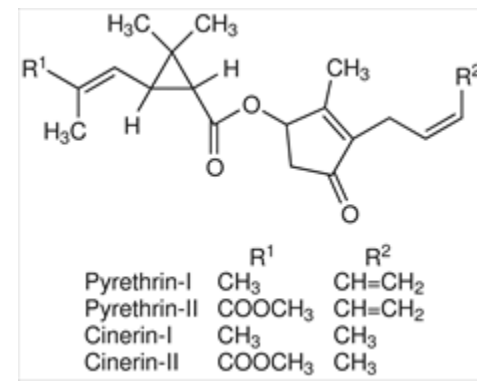


α -Pinen

Flos Pyrethri

- ***Tanacetum cinerarifolium***-Dalmaçya Pire otu (= *Pyrethrum cinerarifolium*) (= *Chrysanthemum cinerarifolium*) (Compositae) dried capitilums
- *T. coccineum* (= *Chrysanthemum coccineum*) (*Pyrethrum roseum*)
Grows in Caucasia and Iran
- East Anatolia, widespread in Oltu and Olur (Erzurum). The capitilums are called as “oltu otu, oltu tozu”
- It is used as insecticide

- *T. cinerariaefolium* = *Chrysanthemum cinerariaefolium* (Asteraceae) was used as insecticide since ancient times.
- Essential oil yield is 0.4%. Other species; *T. coccineum*; flowering time is between May-June.
- Capitilums contain 0.5% essential oil.
- Sesquiterpen lactones, and the monoterpene esters (pyrethrins) are the active metabolites(0,5-2%). Pyrethrins are a mixture of esthers.
- Pyrethrins are strong insecticides. They can damage the muscle and sceleton system of insects.



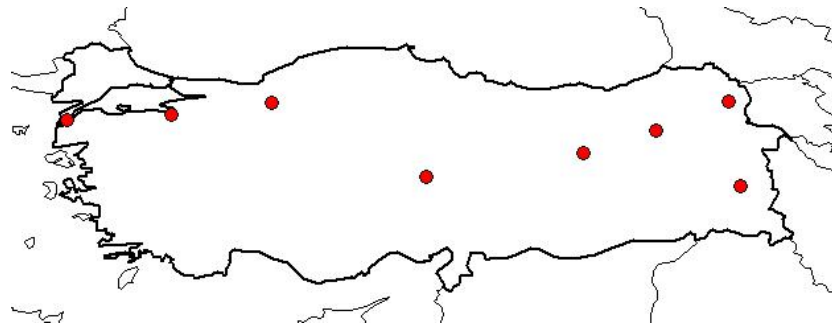
- Feverfew!!!
- *T. parthenium* is used against fever, headache, arthritides and GI problems.
- Especially used for migraine prophylaxis.

RADIX VALERIANAE

Valeriana officinalis (Valerianaceae) rhizomes, radix and stolones.

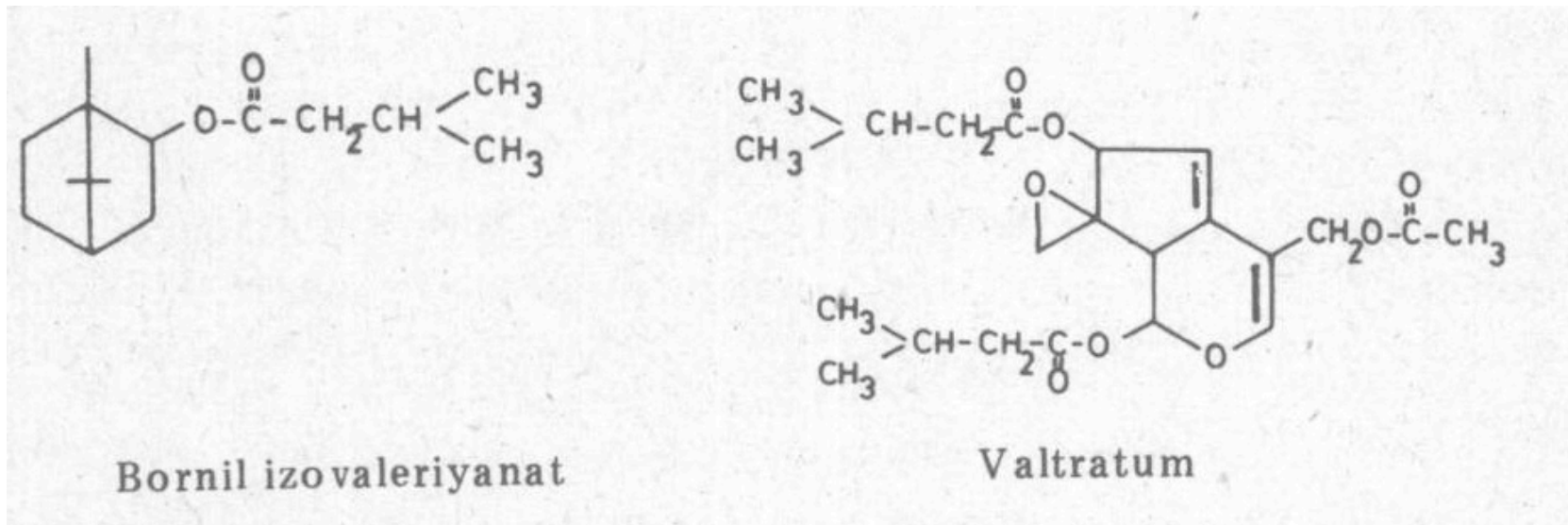
It grows in Europe and Asia.

In Turkey it grows from Uludağ to Erzurum, especially in North Anatolia.



When *Valeriana officinalis* underground parts submitted to water distillation, 0.5-1% essential oil could be obtained. 10% of essential oil consists of **bornyl izovalerianate** and other **borneol esthers** together with **eugenol** ve **eugenol derivatives**.

The other group of active compounds of Radix Valeriana is **valepotriats** (isovalerianic acid esthers). Valtratum is one of the major valepotriats.



R. Valerianae is used as antispasmodic and central nervous system sedative. The active compounds are isovalerianic acid esthers.

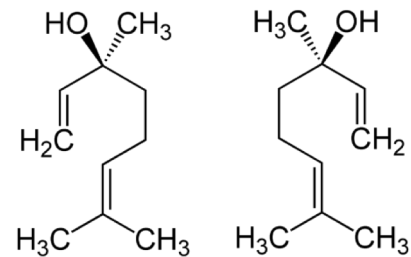
These esthers are not volatile and can not be transferred by water and are absent in essential oil. Concrete obtained from R. Valerianae contains isovalerianic acid and valtratum, and more effective then the essential oil.

V. officinalis is perennial plant with white, good smelling flowers. The extract of the flowers of the plant was used as perfume in 16th century.

Radix Valerianae is sedative and used against anxiety.

FRUCTUS CORIANDRI

- *Coriandrum sativum* (Umbelliferae) dried fruits.
- Mediterranean plant, grows in Turkey.
- Fruits submitted to steam distillation and essential oil yield is 0.3 - 1%.
- 60-70% of the essential oil is **linalool**.
- Stomachic, used in producing candy and liqueur.



Linalool enantiomers

Fructus Anisi, Aniseed

- *Pimpinella anisum* (Apiaceae)
- Naturally grows in Middle East; Aegea and South Anatolia. Mediterranean coasts (Spain, North Africa) it is cultivated.
- Pink and white flowers are seen in June.
- Fruits are used as drug.

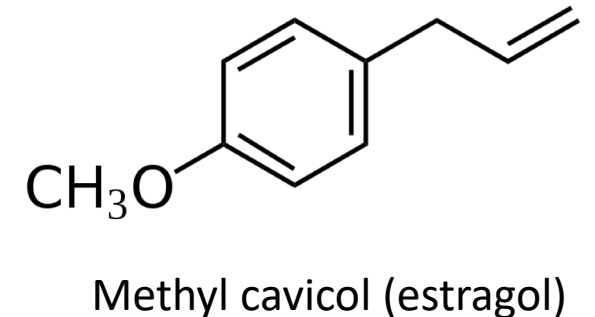
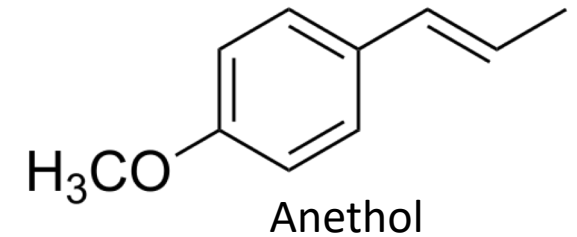


Fructus Anisi, Aniseed

- Fruits are 3-5 mm, pear like, have spicy aroma. All Umbelliferae fruits are schizocarp. Every mericarp has five costa and mesocarp has many glandular channels.
- Narrow glandular channels, single cell trichomes with spotted cuticula and small druse could be observed anatomically.

Fructus Anisi, Aniseed

- 2-3% essential oil yield with water distillation. Essential oil freezes at 15°—19°C. 80-95% of the essential oil is anethol. Anethol is a p-anole derivative. Cavicol is a p-anole isomer. The methyl estherof cavicol is methyl cavicol. Also anise aldehyde, anisic acid etc. could be obtained.



Oleum Anisi, Aniseed Oil

- According to the European Pharmacopoei Oleum Anisi has to contain at least 84-93 % *E*-anetol, 0,5% *Z*-anetol.
- ***Conium maculatum*** is used instead of *Pimpinella anisum*, and sometimes used together by public. This mixture essential oil is toxic, because of toxic alkaloids: coniin and conisein.

Oleum Anisi, Aniseed Oil

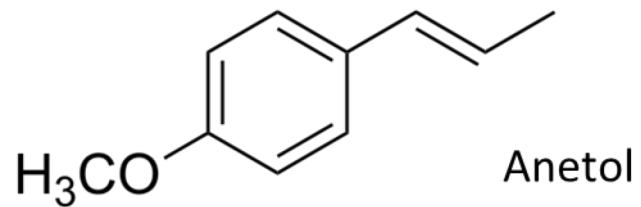
- Oleum Anisi and some semisynthetic derivatives are used in liqueur and alcoholic drink production.

Illicium verum

Illicium verum grows in far east.

Fruits essential oil yield is 3-5%.

80-90% of the essential oil is anethol. Drug is called as Fructus Anisi stellati.



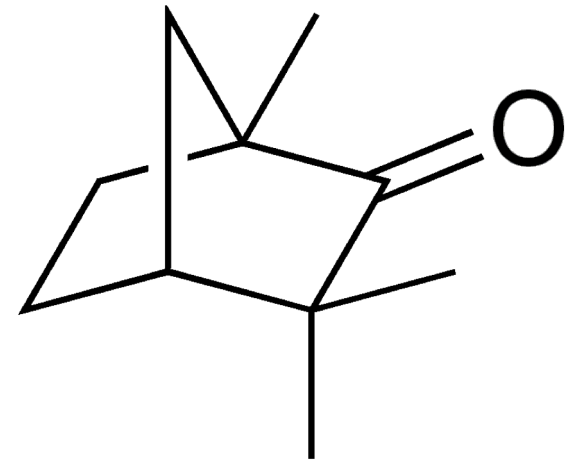
Fructus Foeniculi, Fennels

- *Foeniculum vulgare* (Apiaceae)
- Fructus.
- It grows naturally in Aegea and Mediterranean region.
- Bigger than Anisi fructus, 6-11 mm, it has 5 costa in every mericarp, has large glandular channels.
- 4-6% essential oil yield is obtained by distillation. 60-80% of the oil is anethol, 10-15% of fenchone. Fenchone is a bicyclic compound with a ketone group on second carbon.



Fructus Foeniculi, Fennels

- Fruits of the plant is carminative like Fructus Anisi. Z-anetol is obtained from Oleum Foeniculi.
- The essential oil controlly sold in Europe.
- It is traditionally used for urinary and digestive system problems. It has diuretic feature.



fenchone

Bitter Orange

- *Citrus aurantium ssp aurantium*
 - Mediterranean plant, cultivated especially in Spain.
1. Orange flower oil: Oleum Neroli
 2. Orange leaf oil: Petit Grain



Bitter Orange, *Pericarpium Aurantii amara*

- Good smelling white yellowish flowers.
- Rich in flavonoids.
- The extracts obtained from Bitter orange exocarp is used for smell regulating agent in pharmaceutical industry.
- The essential oil yield obtained from exocarp of the fruit is 1-2%. The main component of the oil is limonene. Aldehydes are the minor constituents. The pericarp of the fruits contain flavanone glucosides in the ratio of 5-14%. The most known flavonoid is hesperidoside. Compounds responsible for the bitter taste of the exocarp are triterpenic compounds such as limonides and degradation products of glucosides.



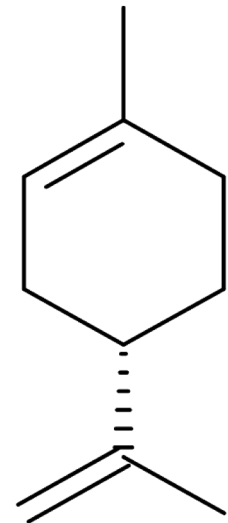
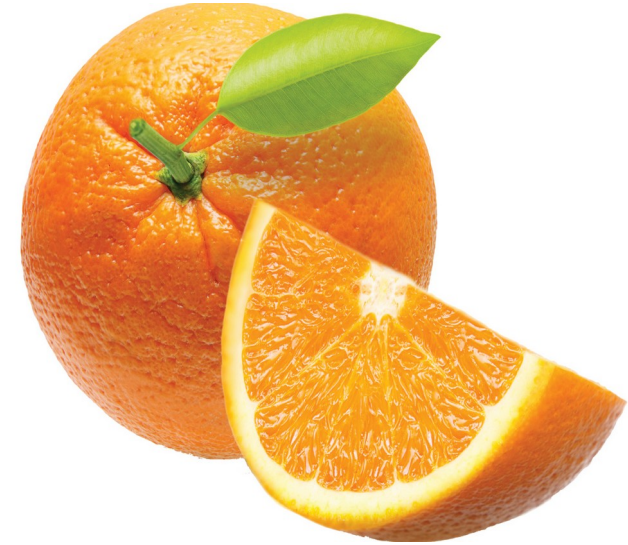
Bitter Orange

Pericarpium Aurantii amara

- Used as appetizer due to its bitter taste. Gastric ulcer should be observed due to usage. Infusion of leaves and flowers are used for minor insomnia by both children and adults.
- Turunç syrup and tincture is prepared using pericarp.
- Pericarp of the fruits decreases capillary fragility and protects the vein structure.

OLEUM AURANTII

- ***Citrus aurantium var. dulce*** (Rutaceae).
- Essential oil is obtained from the pericarp of the fruit by mechanic extraction.
- It's native to China but well adaptated to Mediterranean.
- 0.5% essential oil yield.
- Main component of the oil is limonen with a ratio of 90-95%.
- Also 2-3% decyl aldehyde.
- A coumarin compound named as «aurapten» that precipitates in cold is another constituent.



limonen

OLEUM AURANTII

- Oleum Aurantii is a secondary product obtained in orange juice factories.
- Oleum Aurantii is used as odour agent and for preparing cologne.



OLEUM CITRI

- *Citrus limonum* (Rutaceae).
- It grows in Asia, localized in Europe.
- Widespread in North, South and West Anatolia. In Turkey essential oil is not obtained from the plant.
- Essential oil yield is 0.5% by mechanical extraction. 90% of oil is limonene. 3.5% citral and some citronellal.



OLEUM CITRI

- There is a coumarin compound which precipitates in cold named as «citropten».
- Methyl heptenone and octyl and nonyl aldehydes should be responsible for the characteristic odour.
- Deterpene lemon oil is obtained by 60% ethanol extraction, terpenic compounds are separated by filtration. After distillation of ethanol diterpene oil can be obtained.

OLEUM CITRI

- Oleum Citri used as odorizing agent especially in perfume industry.

Cymbopogon nardus

- Commercially used for obtaining lemon odour.
- ***Cymbopogon nardus*** (Gramineae), grows in South Asia.
- Essential oil yield is 1% by hydrodistillation. Essential oil is named as «Citronella" and contains 50% **citronellal**.



Cymbopogon citratus

- Cultivated in South Asia and Central America.
- Essential oil yield is 1-2% by hydrodistillation. Essential oil is named as «Lemongrass" and contains 70-80% **citral**. This oil used to obtain citral. Citral is precursor of Vitamin A.
- The most used essential oil In Turkey is Oleum Citri (approximately 100.000 kg in a year). So that, citronella is imported.