

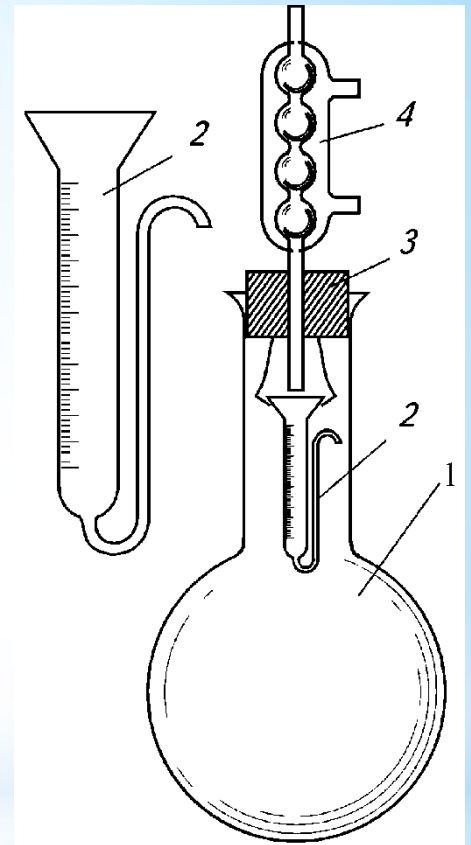
# **Description of medicinal plants and medicinal herbal raw materials containing volatile oils**

# Preparation of volatile oils

The principal methods used in the preparation of volatile oils from plants are:

1. *Distillation in water or steam.*
2. Scarification and expression.
3. Extraction with solvents. (Enfleurage).
4. Enzymatic hydrolysis (for glycosidic volatile oils e.g. mustard oil).

In order to determine the volume of oil, the plant material is distilled with water and the distillate is collected in a graduated tube (2). The aqueous portion separates automatically and is returned to the distillation flask.



## Rose flowers – *Rosae Flos*

**Red Rose, French Rose, Provins Rose - *Rosa gallica* L.**

### Family *Rosaceae*

A shrub attaining the height of 1 to 1.5 m. It is branched and has prickles, alternate, imparipinnate leaves, each having 3-5 broadly elliptic leaflets which are obtuse at apex, cordate at base and glandular-serrate along the margin. The flowers are large, with velvety, purplish-red petals and very fragrant. The fruit is an orange-red, hip containing achenes.



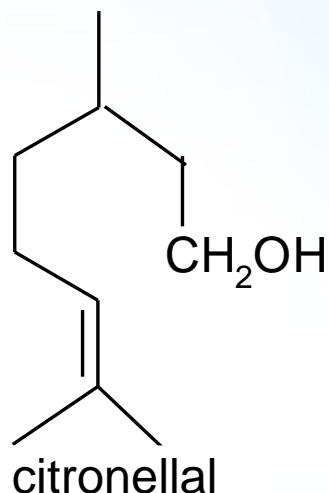
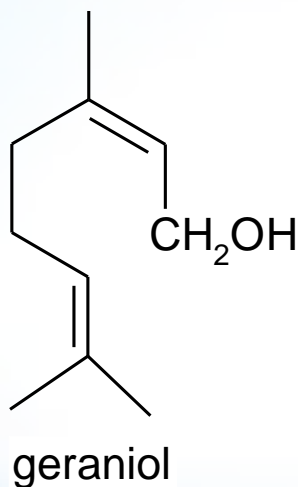
The raw material consists of a mixture of separate and broken petals and entire cones of numerous imbricated petals. Petals broadly ovate, summit retuse, margin entire, base obtuse, externally of a purplish-red to weak red colour; texture velvety; when dry brittle; odour rose-like; taste astringent and slightly bitter.

\* *Chemical composition*

\* **Volatile oil** : heranial (50-60%), citronellal (25-30), neral (10%), phenylethylyc alcohol, cinnamon aldehyde;

\* **alkanes,**

\* **tannins**



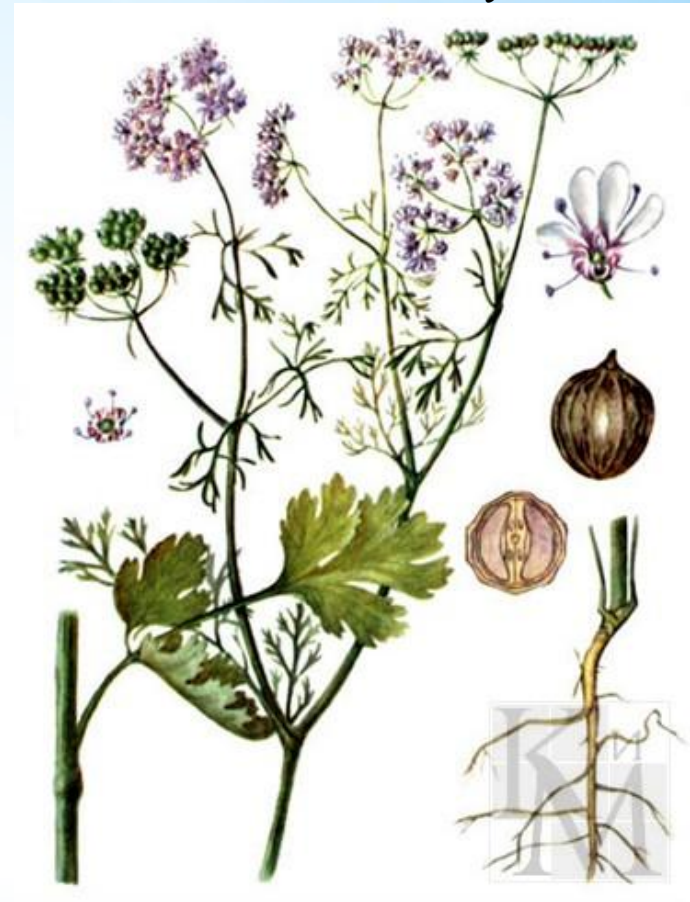
*Use in medicine*

**Volatile oil, „Rosanol”, infusion of petals produce spasmolytic, anti inflammatory, analgesic and antiseptic affect in treating cholelithiasis and nephrolithiasis. Volatile oil is used in perfumery.**



**Coriander fruit – *Coriandri Fructus***  
**Coriander - *Coriandrum sativum***  
**Fam. - *Apiaceae (Umbelliferae)***

Coriander is an annual herbaceous plant about 70 cm high. Its stem is naked, thin - furrowed, hollow. The plant has both radical and cauline leaves. Radical leaves have a long petiole and incisely - serrated margin. They are tripartite. Cauline leaves are short - petiolate or sessile, pinately parted with linear lobes. Inflorescence is a compound umbel. Flowers are white or pinkish, small. Fruit is cremocarp.



The drug usually consists of the whole cremocarps, which are about 2-4 mm in diameter. Each cremocarp consists of two hemispherical mericarps, united by their margins. The apex bears two divergent styles. The ten primary ridges are wavy and inconspicuous: there are 12 more prominent, secondary ridges. The fruits have a straw - yellow colour, an aromatic odour and a spicy taste.

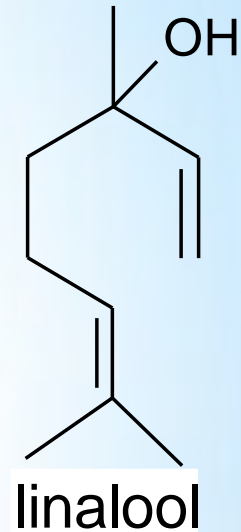


# Coriander fruit

The unmaturred plant has a mousey, unpleasant odour. While ripening the fruits get pleasant aromatic odour.

## \* *Chemical composition*

- \* **Volatile oil** : geranial , citronellal, linalool (coriandrol) (65-70%), menton, sesquiterpenes: germacron;
- \* **flavonoids,**
- \* **tannins,**
- \* **phenolic acids**



## *Use in medicine*

***Coriander*** is used to improve the function of gastro-intestinal tract, it is also bile-expelling, antihemorrhoidal, carminative, antiseptic, analgesic. Coriander fruits are also used for improving taste, odour of drugs (it is a flavouring agent).

***“Espol”, “Citral”***- antimicrobial.

**Lemon peel – *Citri Exocarpium***

**Lemon - *Citrus limon***

**Fam. - *Rutaceae***

### *Chemical composition*

• **Volatile oil : (0,6%)**: limonene, citral, citronellal, geranyl acetate;

✿ **flavonoids glycosides**: hesperidin, eriocitrin, neohesperidin,

✿ **coumarins**,

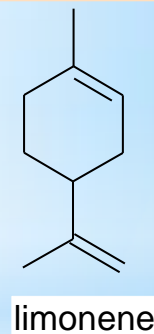
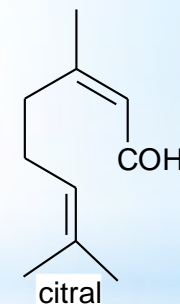
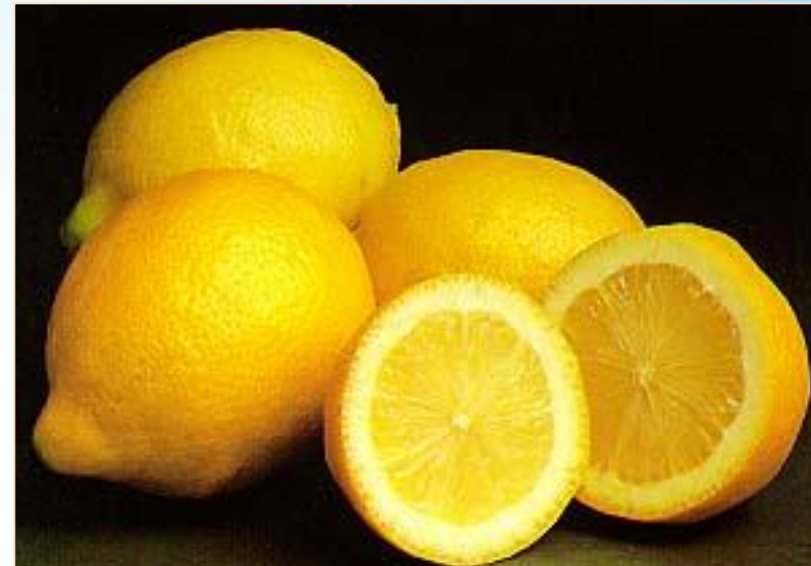
✿ **steroids**: sitosterol,

✿ **organic acids**: citric acid,

✿ **sugars**,

✿ **vitamins**: C, B<sub>1</sub>, B<sub>2</sub>, carotin

✿ **salt K, Cu**



### *Use in medicine*

Lemon is a source of volatile oil (*Oleum Citri*). The oil is used in perfumery and to improve the smell of medicines. “*Citral*” has antimicrobial activity. Lemon peel is used for producing **vitamin P** (citrine). **Dry peel** – bitterspicy stomachic. © CNC Department, NUPh, 07.10.2015



**Common balm herb – *Melissae Herba***

**Common balm leaf - *Melissae Folium***

**Common balm - *Melissa officinalis***

**Fam. - *Lamiaceae (Labiatae)***

Common balm - is a perennial herbaceous plant about 30-80 cm high. The plant has straight, **4 – edged branching stem**.

**Leaves are opposite.** The lower leaves are long - petiolate, ovate in shape; margins are serrate. The upper leaves are shortly - petiolate, oblong in shape and have a dentate margin. The lamina has a dark-green upper surface which is slightly pubescent and a lighter green lower surface. The stems and leaves are almost naked.

Flowers are small, arranged in verticillasters, containing 6-10 flowers and located in axils of upper leaves. The inflorescence is **a spike**.

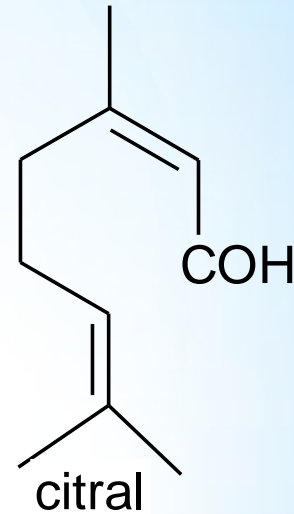
Calyx is bilabiate. Corolla is a white, pentapetalous, bilabiate. Fruit is a dry multicoccus.



The odour is aromatic, spicy, and like lemon; the taste is pleasantly spicy.

## *Chemical composition*

- **Volatile oil (0,8-1,6%)**: citral (upper 60%), linalool, geranial, citronellal;
- **flavonoids**: rutin,
- **tannins**,
- **cinnamic acids**: caffeic acid,
- **triterpenic acids**: oleonolic, ursolic



## *Use in medicine*

**Infusion** has a sedative, anti-inflammatory and bacteriostatic action. Crushed fresh leaves (for external use) can be used to treat injury, abscess, edemas.

**Lavender flowers - *Flores Lavandulae***

**Lavender - *Lavandula angustifolia***

**Family - *Lamiaceae (Labiatae)***

Lavender is an evergreen under - bush of 30-60 cm high. The leaves are sessile, opposite and oblong - linear in shape, 6 cm long. The margins of leaves are curved inwardly. The leaves are pubescent. The inflorescence is a spike.

The drug is represented by the inflorescences, consisting of flowers, arranged in false whorls. Because, the petals readily fall off during the drying process, the drug consists mainly of bluish grey calices; these have five teeth. The petals are fused in to a tube with a lower lip, consisting of three small lobes and an upper lip comprising two larger lobes; the colour varies from deep bluish grey to a discoloured brown. Inside the corolla, there are four stamens and the superior ovary.

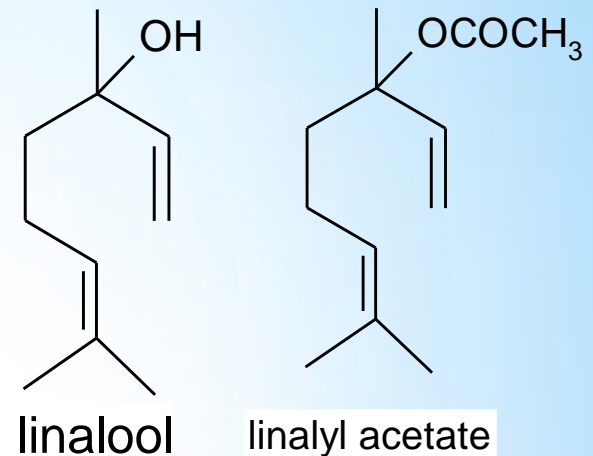


The odour is intense with a pleasant and aromatic scent; the taste is bitter.



## *Chemical composition*

- **Volatile oil (1,2%):** esters of linalol with acetic acid (to 50%), linalool (to 45%), geraniol, neral, 1,8-cineal, borneol.
- **coumarins,**
- **triterpenic acids:** ursolic
- **tannins,**
- **antocians,**
- **sugars, wax,**
- **mineral salts.**



### *Use in medicine*

**Infusion** has a sedative, spasmolytic, carminative action; **Lavender oil** (for external use) has an antiseptic action and can be rubbed in skin to treat neuralgia; **“Livial”** – anti-inflammatory, anaesthetic. Lavender oil also used as an **insecticide.**



## Peppermint leaf - *Menthae piperitae Folia*

### Peppermint - *Mentha piperita*

#### Fam. – *Lamiaceae (Labiatae)*

Peppermint - is a **cultivated** perennial herbaceous plant about 100 cm high. The plant has creeping rhizomes.

The stem is upright, branchy, 4 - edged, naked or with rare hairs. The leaves are opposite, oblong - ovate in shape: acuminate at the apex and cordate at the base, entire, thin, fragile; 3- 9 cm long and 1 -3 cm wide. They have sharply dentate margin. Venation is pinnate, prominent on the lower surface. The lower surface is slightly pubescent and secretory trichomes are visible under a lens, as bright yellowish points.

The flowers are small and located on the top of shoots. The inflorescence is a spike. Corolla is bilabiate, pinkish or pale - violet in colour. The fruit consists of nutlets.

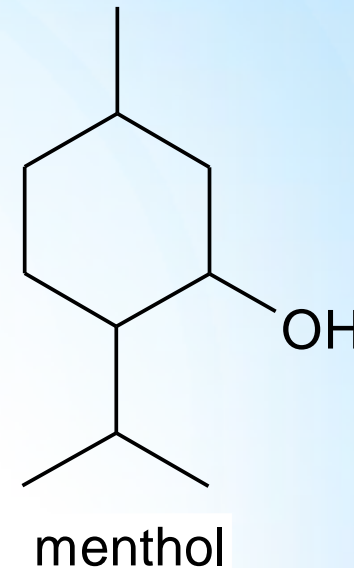


Peppermint leaf has a characteristic and penetrating odour and a characteristic aromatic taste.

When chewing leaves the constituents leave the feeling of cold in the mouth.

## *Chemical composition*

- **Volatile oil:** menthol, menthone, peperitone, metilacetat,
- **flavonoids,**
- **coumarins,**
- **saponins,**
- **tannins.**



## *Use in medicine*

**Volatile oil, menthol, gastric drops, infusion, tincture** – raise secretion of digestive glands produce a choleric, spasmolytic, sedative action; *Corvaldin, Corvalol, Validol, Valokormid, Zelenin's drops* - spasmolytic, hypotensive, sedative, analgesic; *Ingalipt, Cameton, Camphomen* - anti-inflammatory, antiseptic; *Mint tablets* – anti-nausea; *liniment Bom-benge, Boromentol, Gevcamen, Menovazin,* - revulsive, analgesic, anti-inflammatory.



**Sage leaf – *Salviae Folia*****Sage - *Salvia officinalis*****Family – *Lamiaceae (Labiatae)***

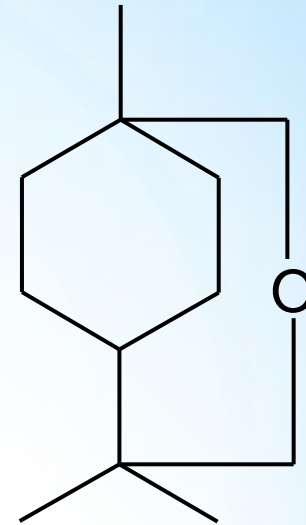
Sage - is an evergreen under-shrub about 50 cm of height. The stems are numerous, branched, 4 – edged, grey - green in colour. Leaves are petiolate, oval or lanceolate in shape. They have obtuse apex, cordate base and crenate margin. At the base of blade there are one or two oblong lobes ("auricles"). The surface of the leaves is velvety. The leaves are densely tomentose on both surfaces, more on the lower surface than on the upper; They are grey - green in colour, finely downy. The odour is strong, aromatic, spicy and on rubbing clearly reminiscent of eucalyptus oil (high cineol content!).

The taste is aromatic, spicy, somewhat bitter.



## *Chemical composition*

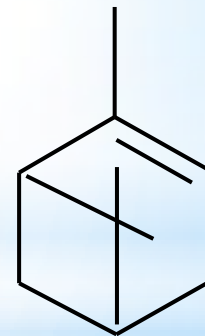
- **Volatile oil:** 1,8-cineole (eucalyptol), pinene, camphor,  $\alpha$ -,  $\beta$ -tuon, borneol,
- **tannins,**
- **triterpenic acids:** oleonolic, ursolic



1,8 - cineole (eucalyptol)

## *Use in medicine*

**Volatile oil, infusion** - anti-inflammatory, antimicrobial, estrogenic, expectorant, astringent, hypoglycemic,  
**Salvin** - anti-inflammatory, antimicrobial.



pinene



**Gum-tree leaf - *Folia Eucalypti***

**Gum - tree, Blue gum, Fever tree - *Eucalyptus globules Lab., Eucalyptus fructicetorum F. von Mueller (Eucalyptus polybractea R.T. Baker) and Eucalyptus smithii R.T. Baker***

**Family - *Myrtaceae***

Gum-tree - is a high evergreen tree up to 100 m with smooth greyish bark, whose periderm breaks off in layers and hangs as long tapes.

Geterophilia is typical phenomena for gum-tree: eucalyptus trees possess two kinds of leaves: those on young plants being cordate or ovate in shape, sessile, soft, blue - grey, covered with a layer of wax; while those on mature trees are short - petiolate, alternate, oblong or narrow - lanceolate in shape, leather - like.

Flowers are sessile, in axillary umbels. Fruit is 4-edged boll.

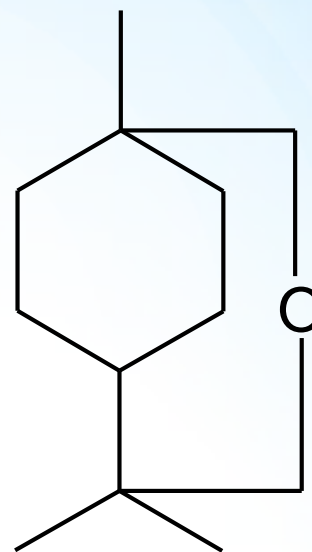
The drug consists only of the matur leaves and not the oval juvenile ones. The more or less similar-shaped, thick, grey – green, petiolate leaves up to the 25 cm long, with the midrib clearly visible particualy on the lower surface. Leaves are entire, naked; their surface is covered with brown spots of corked tissue. The are grey - green in colour and sometimes with reddish - violet shade.

The odour is strongly aromatic, especially on rubbing, reminiscent of camphor. The taste is spicy – somewhat bitter, astringent.



## *Chemical composition*

- **Volatile oil:** 1,8-cineole, *n*-cimene,  $\alpha$ -,  $\beta$ -pinene;
- **flavonoids:** rutin;
- **tannins.**



1,8 - cineole (eucalyptol)

## *Use in medicine*

**Volatile oil** - bactericidal; *infusion, tincture, Ephcamon, Gevcamen, Alorom, Cameton, Ingalipt, Pektussin, tea Elecosol* - bactericidal, anti-inflammatory, astringent; *Khlorophillipt* – antistaphylococcal.

## **Caraway Fruit – *Carvi Fructus***

**Caraway - *Carum carvi***

**Fam. - *Apiaceae***

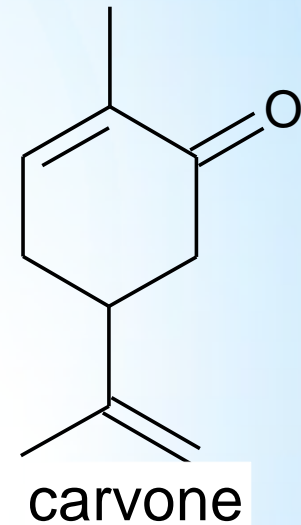
Caraway is a biennial herb about 1m high. The stem is upright, branchy. The leaves are alternate, petiolate, decreasing in size to the top of the stem. The blade of the leaf is twice or three times pinnately sected into linear - lanceolate lobes. Inflorescence is a compound umbel. The flowers are small, white. Fruit is a cremocarp.



The drug usually consists of mericarps. The fruit are slightly curved, brown and glabrous about 4 - 7 mm long, 1 - 2 mm wide tapered at both ends. They are crowned with a stylopod often with style and stigma attached. Each maricarp shows fine almost equal sides, five narrow primary ridges. The odour is strong, aromatic. The taste is aromatic and spicy.

## *Chemical composition*

- **Volatile oil(3-7%):** carvone, limonene, carvacrol;
- **tannins,**
- **fat oil 15%,**
- **proteins,**
- **flavonoids:** quercetin, qempferol,
- **coumarins:** umbellipherone



## *Use in medicine*

**Volatile oil, infusion** - antimicrobial, spasmolytic, expectorant, choloretic, carminative is used for improving lactation.



**Rhizoma cum radicibus Valerianae – Valerianae Rhizomata cum radicibus****Valerian, Cat's Valerian - *Valeriana officinalis*****Fam. - *Valerianaceae***

A tall perennial herb whose underground portion consists of a vertical rhizome bearing numerous rootlets and one or more stolons. The aerial portion consists of a cylindrical, hollow, channeled stem, branched in the terminal region, bearing opposite pinnatisect leaves. The inflorescences consist of racemes of cymes whose flowers are small, white or pink. The fruits are oblong-ovate, 4-ridged. 1-seeded akenes.

The rhizome is obconical to cylindrical, up to 50 mm long and up to 30 mm in diameter; the base is elongated or compressed, usually entirely covered by numerous roots. The apex usually exhibits a cup-shaped scar from the aerial parts. In longitudinal section, the pith exhibits a central cavity.

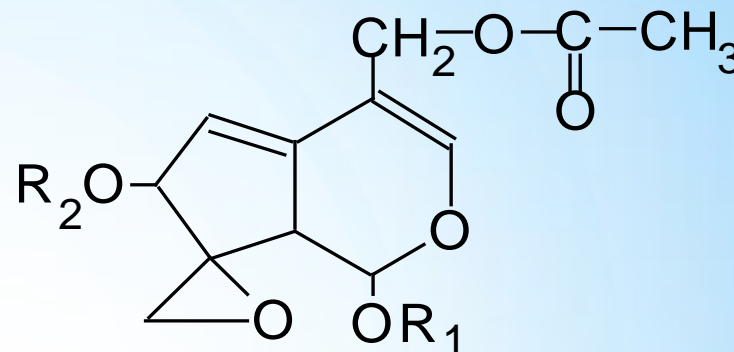
The roots are numerous, almost cylindrical, of the same colour as the rhizome, 1 mm to 3 mm in diameter and sometimes more than 10 cm long. The fracture is short. The odor is characteristically valeric acid like, becoming stronger on ageing. The taste sweetish, camphoraceous and somewhat bitter.



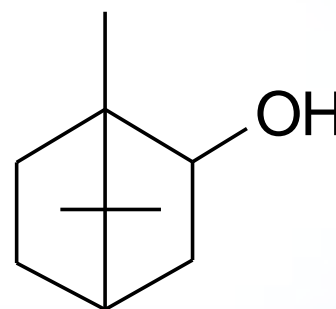
<http://ip.kushnarev.com>

## *Chemical composition*

- **Volatile oil(до 2%):**  
bornlisovalerianate, bornyl formiate, bornyl acetate and bornyl hutyrale, camphene, borneol and pinene;
- **alkoloids:** chalinine and valerianine,
- **iridoids-valepatriats:** valtrate, isovaltrate, acevaltrate,
- **phenolic acids:** caffeic acid, chlorogenic acid,
- **flavonoids**



valepotriate



borneol

## *Use in medicine*

*Infusion, liquid extract, extract in tablets, tincture, Cardiophit, Valocormid, Cardiovalen, drops* - sedative, spasmolytic, analgesic, stomachic medicine.



## Fruits Juniper, Juniper berries, Horse Savin Berries -

### *Fructus Juniperi*

### Juniper - *Juniperus communis*

### Family - *Cupressaceae*

*Juniperus communis* is a low evergreen tree or shrub, sometimes attaining a height of 9 m, having thin, straight, long leaves, arranged in whorls of 3, and dioecious flowers.

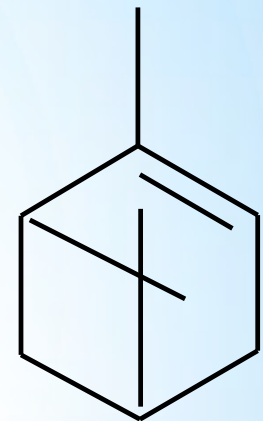
The cones are ovoid and consist of 3 fleshy scales, each one-ovuled. They are subglobular, 5 to 10 mm in diameter, externally smooth, shining, purplish black to red purple, occasionally reddish brown; at the summit a 3-rayed furrow marks the cohesion of the three fleshy bracts forming the pericarp; seeds usually 3, triangular ovate, hard, brown, on the surface of which are large uneven oil glands; odour aromatic upon crushing; taste sweet, pleasant, terebithinate, slightly bitter.



Foto: Marianne Hamnede

## *Chemical composition*

- **Volatile oil (до 2,5%)**:  $\alpha$ -pinene, camphene, sabinene, isoborneol, terpinene, phellandrene, limonene, cadinene, bornylacetate;
- **sugars (upper 40%)**
- **pectins**
- **gums,**
- **organic acids**
- **flavonoids**
- **tannins**



pinene

## *Use in medicine*

**Volatile oil, infusion** - diuretic, disinfect, choleric, expectorant.

**Fruits** - expectorant for diseases of upper airways.