

- 1. Medicinal plants and medicinal plant materials containing volatile oils
(*aromatic components*)**
- 2. Resins and resins combination**

Anisum (anise) fruit - *Fruclus Anisi vulgaris*

Aniseed, sweet cumin - *Anisum vulgare Graerth.*

Family – *Apiaceae (Umblliferae)*

Anise has been cultivated in Egypt, Asia Minor and southern Europe for many centuries.

The drug should be collected as soon as the summits of the fruits assume a grayish-green color. In harvesting, the plants are pulled up by hand or moved down and stacked in tall heaps for about 4 or 5 days until the fruits have ripened. The fruits are then separated by thrashing and carefully cleaned.

Description. The cremocarp is ovoid or pyriform and slightly compressed laterally, yellowish-green, 3 mm to 5 mm long and up to 3 mm wide. Warty trichomes visible using a lens; the fruit shows five primary ridges, running longitudinally, comprising three dorsal ridges and two lateral ridges, non-prominent, and lighter in colour, odor and taste characteristically aromatic, resembling *Illicium*.



Active const.

Volatile oil - up to 3 %; main component **anethol**;

Fixed oil - 10-30%,

Coumarines,

CaC₂O₄.

It contains not less than 20 ml/kg of essential oil.

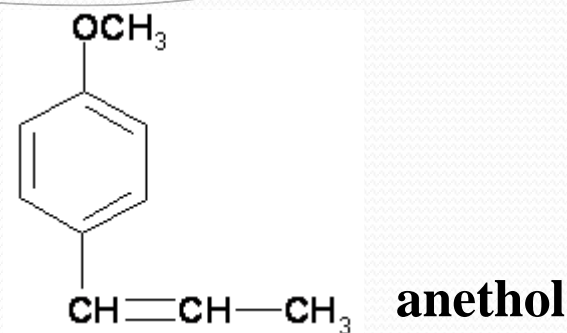
(Ph. Eur)

Uses.

Stimulant, carminative and flavoring agent; a source of Oil of Anise. It is extensively used by the bakery and confectionery trades to flavor their products.

Anise Oil (Oleum Anisi) is the volatile oil distilled from the dried ripe fruit. If solid material has separated the oil should be carefully warmed until completely liquefied before it is dispensed. Stimulant, carminative, aromatic; flavoring agent.

Phyto medicines: Anise Oil; Anisated Ammonia Spirit , pectoral elixir, dry linctus, Trascoff antiasthmatic mixture, infuse .



Anethol is the main constituent of the oils of anise, star anise and fennel and is obtained from these by fractionating, chilling and crystallizing. It is also prepared synthetically. Stimulant, carminative and flavor. Enters into Anisated Ammonia Spirit and Compound Cardamon Spirit.

Star Anise - *Anisum stellatum* - *Illicium verum* Hook.

Family - *Magnoliaceae* (*Illicaceae*)



Description. Star anise is a composite fruit, consisting of follicles. Each follicle is about 12 mm to 20 mm long and 6 mm to 11 mm high. The fruit is formed of six to eleven (usually eight), often unequally developed, boat-shaped follicles, radially arranged around a short, central, blunt-ending columella. Separated follicles and seeds may occur. The distal portion of each follicle is prolonged to a blunt beak. The outer surface is reddish-brown to greyish-brown and roughly wrinkled. The inner surface is shiny, reddish-brown and smooth.

Ripe follicles have a single hard ovoid, compressed, shiny, brown seed. The fruit stalk, often absent, is small and strongly curved at the distal end.

Active const.

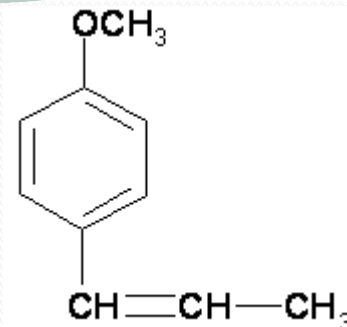
Phenols: trans-anethole (80 to 90 %), trans-isoeugenol,

Terpenoids represented by: monoterpenes: α - and β -pinene, linalool, limonene, cineole, sesquiterpenes: β -caryophyllene, β -bisabolene, β -farnesene.

Lipids - 22 %,

Organic acids: quinic acid, 8.5 % shikimic acid,

Phenolic compounds: phenolic acids, flavonoids, tannins.



anethol

Uses

Star anise is allotted anti-rheumatic and diuretic properties. It also presents expectorant, antispasmodic, digestive and carminative virtues. It has antibacterial activities. Star anise is traditionally used in the symptomatic treatment of digestive troubles, slow digestion, and flatulence. It also relieves stomach pains of a digestive origin. Star anise is recommended against asthma-like bronchitis and spasmodic cough.

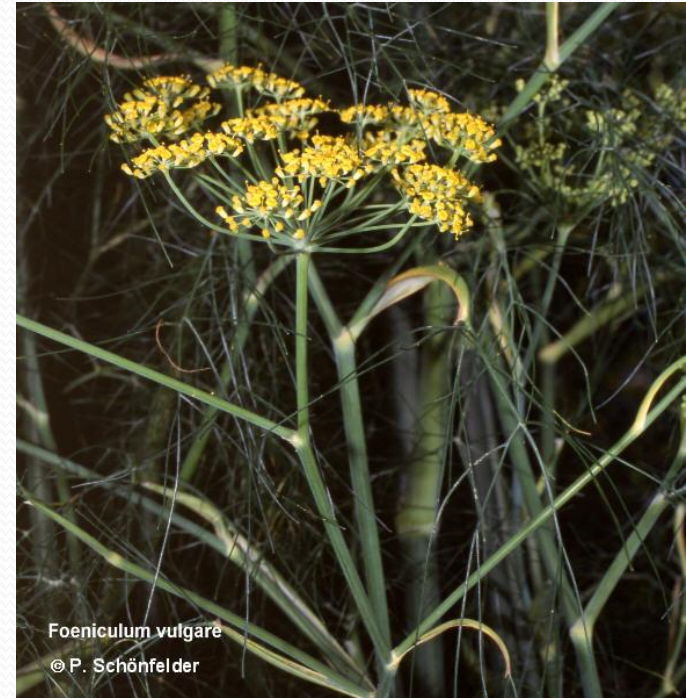
Fennel fruit - *Fructus Foeniculi*

Fennel - *Foeniculum vulgare* Miller.

Fam.* – *Apiaceae (Umbelliferae)

Habitat. Southern Europe and Asia Minor.

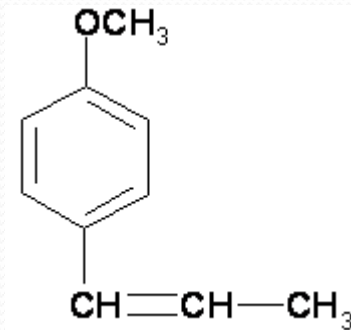
Description. The fruit is a cremocarp, of almost cylindrical shape with a rounded base and a narrower summit. It is generally 3 mm to 12 mm long and 3 mm to 4 mm wide. The mericarps, usually free, are glabrous. Each bears five prominent slightly carenated ridges, odour and taste characteristically aromatic.



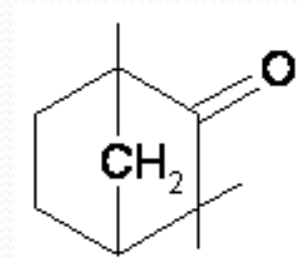
Chemical constituents.

Up to 6.5 % of volatile oil containing anethole and fenchone, fixed oil, calcium oxalate. Stimulant, carminative, galactagogue and condiment; source of volatile oil of fennel.

Phyto medicines: Fennel Water,
Cataria and Fennel Elixir,
Fennel Oil (*Oleum Foeniculi*),
Glycyrrhiza Syrup, Carminative
Mixture, Compound Senna Powder



anethol



fenchone

Wild thyme herb - *Herba Serpylli*

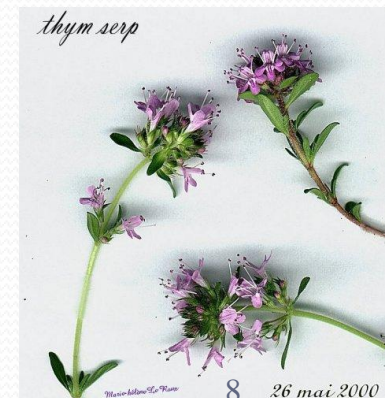
Aromatic compounds

Wild Thyme, Mother of Thyme - *Thymus serpyllum* L.

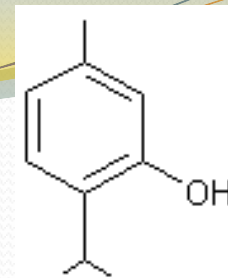
Fam. - *Lamiaceae*

Habitat. It grows spontaneously in dry and sunny places in Ukraine.

Description. The dried leaves and flowering tops. The drug occurs chiefly as leaves mixed with a small amount of segments of the flowering tops, and flowers. Stems mostly 4-angled, dusky yellow-green, simple or opposite-branched, pubescent, of variable length and usually 0.5 to 1 mm in diameter, the nodes up to 20 mm apart, occasionally with attached opposite leaves; leaves linear-lanceolate, up to 6 mm in length and from 0.5 to 2 mm. in breadth, lamina apex acute, base obtuse, tapering into a petiole from 0.5 to 2 mm. in length, upper surface light olive green, with numerous hairs; lower surface, grayish, pubescent and glandular-punctate; inflorescence of about 12-flowered; the calyx tubular-bilabiate, about 4 mm in length, pubescent, upper lip 3-toothed, corolla purplish, bilabiate, upper lip emarginated, lower spreading and 3-lobed; nutlets spheroidal, about 0.5 mm. in diameter, odor aromatic; taste aromatic and warming.



Chem. constituents



Thymol

Essential oil - 0.8 to 2.6 % consisted in phenols: 30 to 40 % thymol,

2.5 to 15 % carvacrol, p-cymol,

terpenoids: monoterpenes (borneol, camphene, cineole, linalool, α - and β -pinene, α -terpineol, geranyl acetate), sesquiterpenes, (β -caryophyllene),

phenolic compounds: phenolic acids, flavonoids, mainly flavones (luteolin, luteolin-glucosides,), tannins,

triterpenes: saponins.

Uses

Wild thyme has antispasmodic, expectorant, antitussive, carminative and anti-asthenic virtues. It is allotted antibacterial, anti-fungal, anti-virus and vermifuge properties due to its content in thymol and carvacrol. It is also has antipruritic, healing, anti-rheumatic virtues. It has diuretic, digestive and aperitive properties. It has aphrodisiac properties.

Cosmetic: The water soluble part has astringent, anti-oxidizing, antiseptic and regenerative properties. Thyme essential oil has antiseptic, anti-oxidizing and deodorant properties. *Phyto medicine: Pertussine*

Thyme herb - Herba Thymi vulgaris***Thyme, Garden Thyme - Thymus vulgaris L.******Family - Lamiaceae (Labiatae)***

The drug occurs chiefly as leaves mixed with a small amount of segments of the flowering tops, and flowers. Stems mostly 4-angled, purplish-red to yellow-green, simple or opposite-branched, pubescent, of variable length and usually 0.5 to 1 mm in diameter, occasionally with attached opposite leaves; leaves linear-lanceolate, ovate or oblong, up to 6 mm in length and from 0.5 to 2 mm in breadth, lamina apex acute, base obtuse, tapering into a petiole from 0.5 to 2 mm in length, margin revolute, upper surface light gray, with numerous hairs; lower surface, grayish, pubescent and glandular-punctate; inflorescence of about 12-flowered;

odor aromatic; taste aromatic and warming.

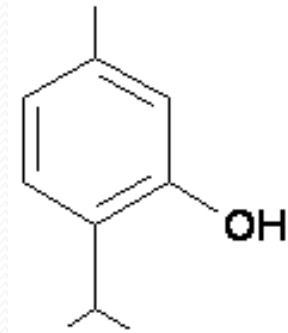


Chemical constituents.

The flowering parts contain 0.8 to 2.6 % **essential oil** consisted in: phenols: 30 to 40 % thymol, 2.5 to 15 % carvacrol, p-cymol, monoterpenes (borneol, camphene, cineole, p-cymene, geraniol, linalool, α - and β -pinene, α -terpineol, geranyl acetate), sesquiterpenes (β -caryophyllene),

phenolic compounds represented by: phenolic acids, flavonoids, mainly flavones (luteolin, luteolin-7-glucoside, luteolin-7-diglucoside), tannins,

triterpenes: saponins.



Thymol

Use.

Thyme has antispasmodic, expectorant, antitussive, carminative and anti-asthenic virtues.

Phyto medicine

Pertussin - expectorant; *Efcamon* - analgetic; *Pynosol* – antihymicrobial

Pot majoram herb - Herba Origani vulgare

Pot majoram, wild majoram - Origanum vulgare L.

Family – Lamiaceae

A perennial herb indigenous to Europe and Asia.

Description. The raw material consists of the upper parts of stems up to 20 cm with leaves and inflorescences. Stems are green or purple, roughly hairy. Leaves are oblong-ovate in shape, short-petiolate, acuminate at the apex, opposite and have entire or denticulate margin. Flowers are small, pink-purple or white bilabiate. The corolla is brownish-purple or brownish-pink in colour. The odour is aromatic: the taste is bitterish, spicy, slightly astringent.



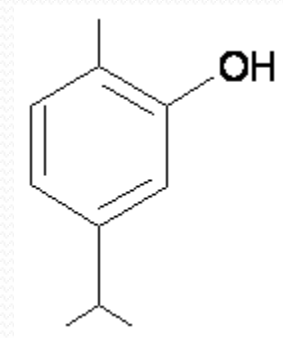
Anatomical characteristics. Upper epidermis composed of large, clear epidermal cells with slightly wavy vertical walls and possessing few or no stomata. Lower epidermis, of small epidermal cells with wavy walls and numerous elliptical stomata. This epidermis on all surface exhibits hairs. The hairs are papillose, 1- to 8-celled. The glands have a 1- to 2-celled stalk and a 1- to 8-celled glandular head.

Chemical constituents

Volatile oil containing carvacrol, thymol, free alcohol and ester.

Uses.

The dried herb is used in the treatment of whooping cough, severe spasms with little sputum and other respiratory inflammations



carvacrol

Phyto medicine

Infuse - expectorant;

Urolesan – diuretic, cholagogue, spasmolytic

Clove - Caryophylli flos

Clove - Eugenia caryophyllus (Spr.) Bull. et Harr. (E. caryophyllata Thunb.) or Syzygium aromaticum (L.) Mer. et L.

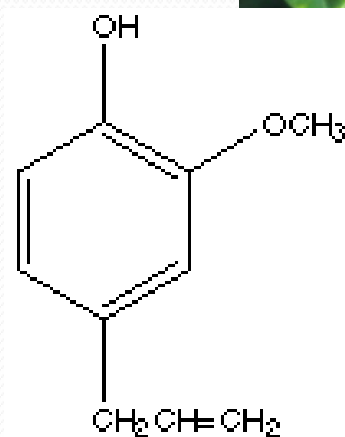
Family - Myrtaceae

Habitat. Molucca Islands but cultivated on the islands of Penang, Ambon, Pemba, Zanzibar, Sumatra, Madagascar, and Mauritius as well as in the Seychelles and the West Indies

Plant. The plant is a tree that grows to 15 meters in height. The buds are gathered when they change from green to crimson and are carefully dried in the sun.

Chemical constituents. Clove contains a volatile oil, 14 to 20%; gallotannic acid, 10 to 13%; oleanolic acid; vanillin; the chromone, eugenin.

Uses. Clove is a carminative and a flavour. It contains not less than 85%, by volume, of total phenolic substances, chiefly eugenol.



eugenol



Cinnamon - *Cinnamomum zeylanicum*

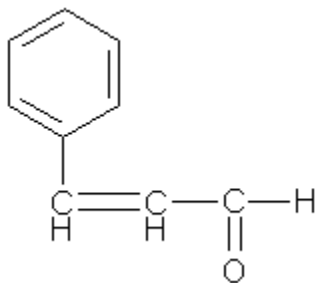
Family - *Lauraceae*

The tree is cultivated in all tropical regions (Sri - Lanka, India, Madagascar, Brazil, Jamaica, Martinique etc.)

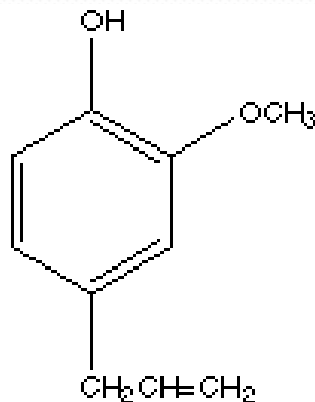
Chemical constituents.

Cinnamon contains up to 1-2 % of volatile oil, phlobatannins, mucilage, calcium oxalate and starch.

Volatile oil of cinnamon consists of the cinnamic aldehyde, eugenol and phelandrene.



Cinnamon aldehyde



Eugenol

Uses.

Cinnamon is used as a flavouring agent and mild astringent. The oil has carminative properties and is a powerful germicide.

Vanilla fruits - Fructus Vanilla

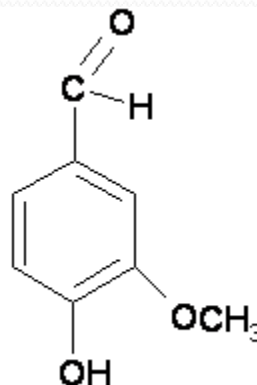
Vanilla - Vanilla planifolia Andr.

Family - Orchidaceae

Vanilla is largely grown in the woods of eastern Mexico. It has also been introduced into many oceanic islands: Seychelles, Madagascar, Java, Ceylon, Tahiti, Guadeloupe, Martinique and Indonesia.

The fruits are collected when the upper part of the fruit changes colour from green to yellow. The characteristic colour and odour of the drug are only developed as a result of enzyme action during the curing. The process consists of slow drying in sheds, which are kept at carefully regulated temperatures.

The fruits contain volatile oil and glycosides, namely glucovanillin (vanilloside) and glucovanillic alcohol. Glucovanillin yields on hydrolysis glucose and vanillin.



Vanillin

Uses. Vanilla is used for aromatization of drugs.



Resins and resins combination

- **The term ‘resin’ is applied to more or less solid, amorphous products of complex chemical nature.**
- **On heating they soften and finally melt.**
- **They are insoluble in water and usually insoluble in petroleum ether but dissolve more or less completely in alcohol, chloroform and ether.**

Chemical composition

- *Chemically*, resins are complex mixtures of resin acids, resin alcohols (resinols), resin phenols, esters and chemically inert compounds known as resins.
- *The chemical structures of many of these compounds have now been elucidated.*

- Resins are often associated with volatile oils (*oleoresins*), with gums (*gum-resins*) or with oil and gum (*oleo-gum-resins*).
- Resins may also be combined in a glycosidal manner with sugars.
- Resins burn with a characteristic, smoky flame.
-

Balsams

- **Balsams** are resinous mixtures that contain large proportions of cinnamic acid, benzoic acid or both or esters of these acids.
- The term “balsam” is often wrongly applied to oleoresins and should be reserved for such substances as *balsam of Peru*, *balsam of Tolu* and *storax*, which contain a high proportion of aromatic balsamic acids.

Styrax bensoin, S. sumatranum

Fam. - *Styracaceae*

Styrax is a genus of about 130 species of large shrubs or small trees in the family *Styracaceae*, mostly native to warm temperate to tropical regions of the Northern Hemisphere, with the majority in eastern and southeastern Asia, but also crossing the equator in South America.

Common names include *styrax*, or *storax*, *snowbell*, and *benzoin*.

Benzoin resin is a dried exudation from pierced bark. Deep incisions are made in the trunk of the tree, from which the grayish colored sap exudes. When the resinous sap becomes hard and brittle, it is collected from the bark.

Act const

Benzoin oil's main chemical components are benzoic, cinnamic acids, benzyl benzoate, benzoic aldehyde, vanillin and coniferyl benzoate.



Uses

Resina Benzoë – The therapeutic properties of benzoin oil include the following; antiseptic, anti-depressant, astringent, anti-inflammatory, carminative, cordial, deodorant, diuretic, expectorant, sedative.