

# **Volatile oils Containing Aromatic Monoterpenes as Active Constituents**

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**THYME (kekik) THYMI HERBA**

*Thymus vulgaris, T. zygis*

**Lamiaceae**

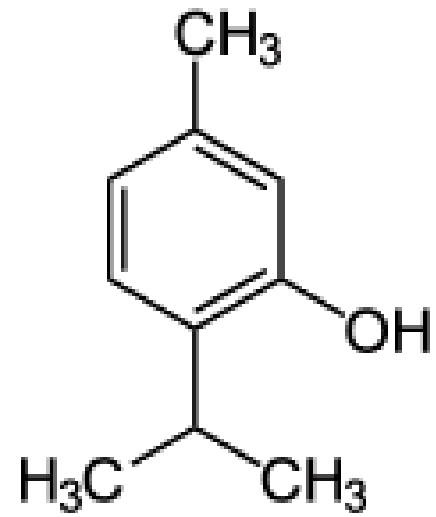
*Thymus vulgaris*

*T. zygis*

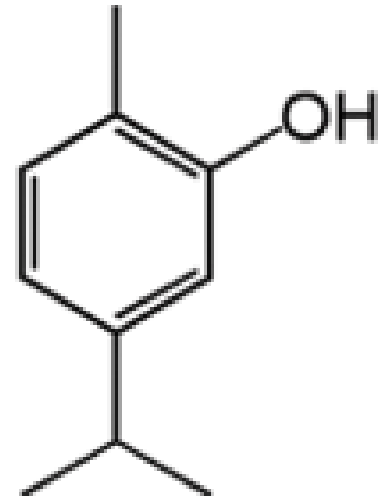
It is unlikely that the constituents of the essential oil are responsible alone for the activities traditionally attributed to the drug, namely the “whole leaves and flowers separated from the previously dried stems of *Thymus vulgaris* or *Thymus zygis* or a mixture of both species”

(Eur. Ph., 3rd Ed.). “It contains not less than 12 ml/kg of essential oil and not less than 5 ml/kg of volatile phenols, expressed as thymol.

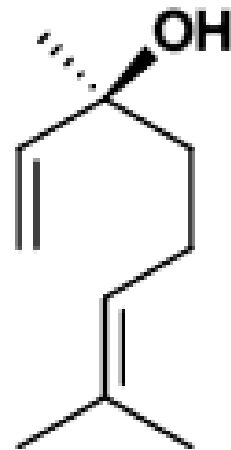
**Chemical Composition :** The essential oil content of the drug ranges from 5 to 25 ml/kg and its composition fluctuates with chemotype under consideration, with a half dozen of these having described. **The phenols-thymol and carvacrol-**dominate over linalool. The drug also contains a lot of flavonoids (apigenin, luteolin, 6-hydroxyluteolin glycosides, as well as di-, tri- and tetramethoxylated flavones, all substituted at C-6. Other constituents have been characterized : triterpenes, phenolic acids, saccharides, biphenyls and more.



**Thymol**



**Carvacrol**



**Linalool**

**Tests :** Phenol quantitation is carried out on the essential oil, by dilution with water and ethanol followed by reaction with aminopyrazolone and potassium ferricyanide in the presence of ammonia. The reaction medium is extracted with dichloromethane and the absorbance of the organic phase is measured.

**Pharmacological activity** : Thyme essential oil is rich in phenolics, and it has antibacterial and antifungal properties readily shown *in vitro*, all chemotypes are active, but the bacterial activity is strongest for the thymol-and-carvacrol-containing types.

The spasmolytic activity of thyme is most often attributed to the essential oil phenols, but the flavonoids, especially polymethoxyflavones are also spasmolytic.

**Uses :** Thyme leaf and flowering tops are traditionally used 1. for the symptomatic treatment of gastrointestinal disturbances (epigastric bloating, impaired digestion, eructations, flatulence). 2. **for the symptomatic treatment of cough.**

Topically, it is traditionally used to relieve nasal congestion in the common cold; to treat minor wounds after thorough cleansing; in antalgic lozenges and collutoria for disorders of the mouth, pharynx, or both, and in mouthwashes for oral hygiene.



In Germany, thyme is considered to be a bronchospasmolytic, expectorant, and antibacterial (Commission E). It is used for catarrh of the upper respiratory tract and for the symptoms of bronchitis.

Both the essential oil and thymol are ingredients of various proprietary drugs : antiseptic and healing ointments, syrups for the treatment of respiratory disorders, and preparations for inhalation. The essential oil is widely used as an antiseptic in aromatherapy.

Thymol an external and intestinal antiseptic, as well as an antifungal and anthelmintic agent, is used in the composition of products designed for buccal antiseptics and for the treatment of cutaneous irritation.

Thymol and carvacrol are isomers and they have almost same activities, but thymol can be obtained in crystalline form, whereas carvacrol can be found always as a liquid.

**OREGANO (kekik)**

**ORIGANI HERBA**

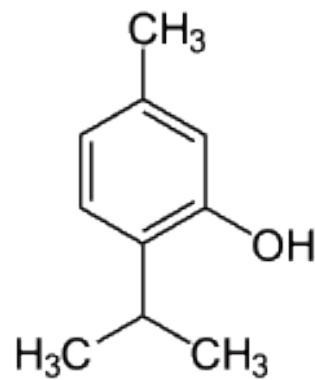
*Origanum vulgare*

**Lamiaceae**

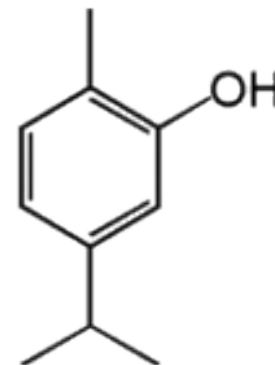
The drug produces an essential oil generally rich in thymol, or carvacrol, or both.

Phytopharmaceutical products based on the flowering tops of oregano and designed for oral use may claim therapeutic indications identical to those of thyme. It is used traditionally for the symptomatic treatment of gastrointestinal disturbances (epigastric bloating, impaired digestion, eructations, flatulence) and to treat acute benign bronchial disease.

Topically it is used 1. as an adjunct in the emollient and antipruriginous treatment of skin disorders, as a trophic protective agent for cracks, brises, frostbite, and insect bites, 2. as antalgic lozenges and collutoria for diseases of the oral cavity, pharynx, or both, 3. to relieve nasal congestion in the common cold.



**Thymol**



**Carvacrol**

Many *Origanum* species grow widespread in Turkey, much of them contain carvacrol as the major component in their essential oils.

*Origanum onites*

*O. laevigatum*  
(Cyprus)

**WINTER SAVORY (kekik)**

**SATUREJAE HERBA**

***Satureja montana***

**Lamiaceae**

Winter savory oil is rich in carvacrol (up to 80% in some specimens), among hydrocarbons *p*-cymene is always the most abundant (up to 25%).

Winter savory oil is a strong antiseptic *in vitro*, and this leads some prescribers to use it to treat infectious diseases of the respiratory or urinary tract. It is used traditionally for the symptomatic treatment of gastrointestinal disturbances (epigastric bloating, impaired digestion, eructations, flatulence).



**WILD THYME**

**SERPYLLI HERBA**

*Thymus serpyllum*  
**Lamiaceae**

Wild thyme is a small perennial herb with slender creeping stems, and with small glomerules of very fragrant white, pink, or purple flowers, is quite common in Europe. **The plant contains 1-6 ml/kg of an essential oil of (thymol, carvacrol, linalool).**

The drug is traditionally used 1. for the symptomatic treatment of gastrointestinal disturbances (epigastric bloating, impaired digestion, eructations, flatulence). 2. for the symptomatic treatment of cough.

Topically, it is traditionally used to relieve nasal congestion in the common cold; to treat minor wounds after thorough cleansing; in antalgic lozenges and collutoria for disorders of the mouth, pharynx, or both, and in mouthwashes for oral hygiene. In Germany, its spasmolytic and antimicrobial effects are applied to the treatment of respiratory catarrh (orally).

*Thymus* (39 sp), *Origanum* (31sp), *Thymbra* (2 sp.), *Coridothymus* (1sp) and *Satureja* (14 sp) genera which contain thymol and carvacrol are called as “thyme” in Turkey .

*Thymus vulgaris* does not grow wildly in Turkey, but more than 50 plants used like thyme for their volatile oils, which are rich in carvacrol and thymol, grow in Turkey

*Origanum heracleoticum*

*Origanum onites*

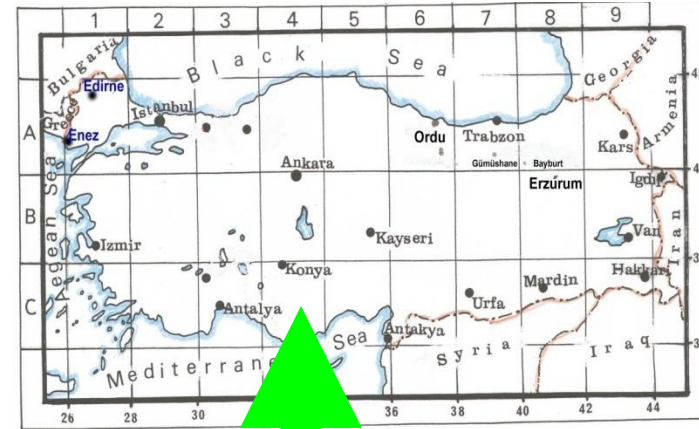
*Coridothymus capitatus*

Growing wildly in Cyprus

*Thymbra spicata*

## Some endemic *Thymus* species

*Thymus cilicicus*



Region Cilicia

Volatile oil of *T.cilicicus* doesn't contain thymol and carvacrol.

***Thymus sipyleus var. davisianus***

**Endemic plant.**

**Volatile oil content : 0.5 %**

**Major compound : 13 - 21 % citral**



## **Reference Books :**

### **Main Book**

**Bruneton, J., Pharmacognosy, Phytochemistry, Medicinal Plants, TEC & DOC Editions, Paris 1999**

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