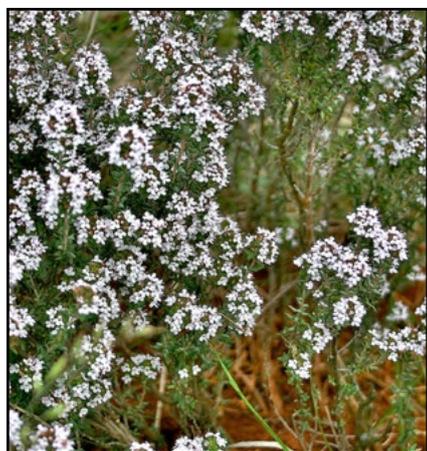


# Thyme

By Salvatore Battaglia



Espirat, (2017), *Thymus vulgaris*. [ONLINE]. [https://commons.wikimedia.org/wiki/File:THYMUS\\_VULGARIS.jpg](https://commons.wikimedia.org/wiki/File:THYMUS_VULGARIS.jpg) [Accessed 6 Aug 2020].

## BOTANICAL NAME

*Thymus ssp.*

## SYNONYMS

Red thyme, garden thyme, common thyme

## FAMILY

Lamiaceae

## CHARACTERISTICS

Red thyme oil is a brownish-red, orange-red coloured liquid with an intense warm herbaceous odour that is somewhat spicy and distinctly aromatic.<sup>10</sup>

Wild thyme, distilled from *T. serpyllum* is a pale yellow, mobile liquid with a fresh, somewhat sharp-terpene, woody-herbaceous odour with a spicy-phenolic undertone.<sup>10</sup>

## BOTANY AND ORIGINS

According to *world checklist of selected plant families* there are over 2000 species of the genus *Thymus*.<sup>1</sup>

The most common species is *Thymus vulgaris* known as garden or common thyme. Other species include *Thymus serpyllum*, known as wild thyme, creeping thyme or mother thyme, *Thymus zygis*, known as Spanish thyme, and *Thymus citriodorus*, known as lemon thyme.<sup>2</sup>

Mailhebiau states there are six different chemotypes of *T. vulgaris*. The two most common ones are located close to the Mediterranean Sea at a low altitude: the thymol type and the carvacrol type.<sup>3</sup> *T. vulgaris* ct. linalool prefers the sun and south-exposed slopes.<sup>4</sup>

The geraniol chemotype is rare and mixed with the linalool type. It is mainly located in high altitudes, on well-exposed slopes at an altitude of 1000-1200 m. The 4-thujanol chemotype is very rare and located between the thymol-carvacrol one and that of linalool. The composition of the 4-thujanol chemotype is very similar to that of *Origanum marjorana* (sweet marjoram). The last chemotype is mainly found in the eastern Mediterranean area and is the a-terpinyl acetate one.<sup>4</sup>

A cluster analysis based on 85 *T. vulgaris* essential oils revealed as many as 20 chemotypes. The most common chemotype was the thymol chemotype. Other chemotypes included the linalool chemotype, the geraniol chemotype; the carvacrol chemotype the borneol chemotype and the sabinene hydrate/terpinen-4-ol chemotype.<sup>5</sup>

Lavabre suggests the geographic location or growing conditions do not seem to make so much difference to the chemotype:

*As seductive as this theory might be, the reality is slightly different. There is in the wild, a predominance of the thymol and carvacrol chemotypes in the dryer and warmer areas, while the milder chemotypes are more abundant under milder conditions. But more than seven years of wild harvesting of thyme have shown me that different chemotypes can be found everywhere. Furthermore, most of the commercial production of chemotyped thyme comes from the same area in southern France and several farmers grow all chemotypes on their farm.*<sup>6</sup>

On the other hand, Schnaubelt states the growers are very skilled in cloning thyme plants whose attractive fragrance will potentially provide an essential oil with a desirable composition such as a higher percentage of linalool.<sup>7</sup>

He also explains the elevation does influence the biosynthesis of the components found in thyme oil. *p-Cymene* is the compound immediately preceding thymol in its biosynthesis and the biosynthesis process goes through to the last step in plants that grow at lower altitudes – this means that *p-cymene* adds on a hydroxyl group which converts it into thymol or carvacrol.<sup>7</sup>

## METHOD OF EXTRACTION

Thyme oil is produced by water and steam distillation of the dried or partially dried leaves and flowering tops of thyme.<sup>8</sup> Grieve states the fresh herb should be collected on a dry day when it is just coming into flower. The lower portions of the stem, together with the yellow and brown leaves, should be rejected and the herb taken to the distillery as soon as possible.<sup>9</sup>

## CHEMICAL COMPOSITION

The chemical composition of *Thymus satureioides* ct. borneol from Morocco was reported as follows:

Tricyclene (0.31%),  $\alpha$ -pinene +  $\alpha$ -thujene (4.13%), camphene (6.82%),  $\beta$ -pinene (0.8%), sabinene (0.09%), myrcene (0.47%),  $\alpha$ -phelladrene (0.11%),  $\alpha$ -terpinene (0.63%), limonene (1.16%),  $\beta$ -phellandrene (0.22%), 1,8-cineole (0.93%),  $\gamma$ -terpinene (2.74%), *p*-cymene (3.86%), terpinolene (0.29%),  $\alpha$ -copaene (0.24%), camphor (1.5%), linalool (3.83%), bornyl acetate (2.24%), terpin-4-ol (2.1%),  $\beta$ -caryophyllene (6.84%),  $\alpha$ -humulene (0.42%), borneol (42.43%), germacrene d (0.11%), d-cadinene (0.52%),  $\delta$ -cadinene (0.44%), geraniol (0.28%), caryophyllene oxide (0.35%), thymol (3.0%), carvacrol (7.72%).<sup>11</sup>

The chemical composition of *Thymus zygis* ct. linalool from Spain was reported as follows:

$\alpha$ -pinene +  $\alpha$ -thujene (4.15%), camphene (0.84%),  $\beta$ -pinene (0.45%), sabinene (0.79%), myrcene (7.86%),  $\alpha$ -phelladrene (0.35%),  $\alpha$ -terpinene (3.93%), limonene (2.66%),  $\beta$ -phellandrene (0.51%), 1,8-cineole (1.4%),  $\gamma$ -terpinene (7.89%), *p*-cymene (3.17%), terpinolene (0.77%), cis-linalool oxide (0.52%), thuyanol-4-ol (0.46%), camphor (0.89%), linalool (44.4%), linalyl acetate (0.33%), terpin-4-ol (10.18%),  $\beta$ -caryophyllene (0.88%),  $\alpha$ -terpineol (1.61%), borneol (1.85%), germacrene d (0.11%), geraniol (0.07%), geraniol (0.17%), caryophyllene oxide (0.06%), thymol (0.83%), carvacrol (0.09%).<sup>12</sup>

The chemical composition of *T. vulgaris* and *T. serpyllum* was reported as follows:<sup>4</sup>

Constituent	<i>T. vulgaris</i>		<i>T. serpyllum</i>	
	Thymol chemotype	Carvacrol chemotype	Linalool chemotype	
$\alpha$ -thujone	4.6%	4.9%	0.26%	1.53%
$\alpha$ -pinene	0.75%	4.3%	0.3%	0.7%
camphene	0.3%	0.8%	0.27%	0.2%
$\beta$ -pinene	0.34%	0.35%	-	0.17%
<i>p</i> -cymene	26.0%	33.9%	2.0%	25.0%
$\alpha$ -terpinene	24.0%	44.85%	0.28%	4.85%
linalool	4.2%	4.2%	77.5%	3.4%
borneol	0.65%	0.8%	0.2%	-
$\beta$ -caryophyllene	3.55%	2.5%	2.8%	2.5%
thymol	34.0%	5.5%	2.2%	8.3%
carvacrol	4.7%	24.5%	trace	14.2%
geraniol	-	-	-	9.0%
methyl linolenate	3.23%	0.91%		
geranyl linaloate	2.23%	0.29%		

A selection of oils from *T. vulgaris* collected from different locations in the Languedoc region (France) were found to have the following range of major constituents:<sup>13</sup>

1,8-cineole (0-3.8%), *p*-cymene (0-29.0%),  $\gamma$ -terpinene (0-23.5%), linalool (0.1-13.4%), sabinene hydrate (0-3.3%), terpinene-4-ol (0.1-5.0%),  $\alpha$ -terpineol (0-6.1%), myrcen-8-ol (0-1.7%), geraniol (0-8.9%), thymol (21.4-72.9%), carvacrol (0.8-26.8%),  $\beta$ -caryophyllene (0.2-7.8%).

Please note that sabinene hydrate is also referred to as 4-thujanol, thuyanol-4-ol, thujanol or thujanol.

## ADULTERATION

Arctander states thyme oil is frequently adulterated or contaminated with organum oil and fractions of various Spanish essential oils. He also states organum oil may often end up being sold as thyme oil merely because of the lack of knowledge from the broker's side.<sup>10</sup>

Synthetic thymol and carvacrol are often used to adulterate thyme oil. White thyme is mostly blended and synthetic.<sup>14</sup> Lis-Balchin states ajowan is often added or substituted. White thyme is often a compounded blend of pine oil fractions, terpineol, rosemary, eucalyptus and red thyme fractions.<sup>15</sup>

Schnaubelt suggests that as the *T. vulgaris* ct. thujanol is only available from dedicated suppliers to the aromatherapy industry the quality of the essential oil is likely to be good.<sup>16</sup>

## HISTORY AND TRADITIONAL USES

### History

The use of *Thymus* genus dates back to ancient Egypt, where it was used for making perfumed balms, for embalming, and for medicinal purposes.<sup>17</sup>

The name thyme originates from the Greek word *thymon*, meaning 'to fumigate'. Others derive the name from the Greek word *thumus*, meaning courage – as the plant was associated with bravery.<sup>9</sup>

According to Dioscorides, thyme was used to treat asthma and loosen congestion in the throat and stomach.<sup>17</sup>

Grieve states the antiseptic properties of thyme were well known in ancient times. Pliny explained when burnt, it helped repel all venomous creatures. The Greeks believed thyme denoted graceful elegance. In the days of chivalry, it was customary for ladies to embroider a bee hovering over a sprig of thyme on scarves they presented to knights. In France, wild thyme was a symbol of extreme Republicanism. Tufts of thyme would be sent out with the summons to a Republican meeting.<sup>9</sup>

The Roman soldiers bathed in a bath infused with the herb before entering battle, and in the Middle Ages sprigs of thyme were woven into the scarves of knights departing for the Crusades. St Hildegard prescribed thyme for plague

and paralysis, leprosy and body lice. Thyme was a strewing herb in Britain and was included in the posies carried by judges and kings to protect them from disease in public.<sup>9</sup>

In 1887, Chamberland demonstrated the bactericidal action of thyme oil. Cadéac & Meunier examined the antimicrobial activity on typhus and glanders bacillus in 1889. Morel & Rochaix in 1921-22 studied its effect on meningococcus, Eberth's bacillus and diphtheria bacillus and staphylococcus.<sup>18</sup>

Thymol is the principal active constituent of thyme oil. It is a powerful antiseptic for both internal and external uses; it was extensively used to medicate gauze and wool for surgical dressings. It resembles carbolic acid in its action, but it is less irritating to wounds and its germicidal action is greater.<sup>9</sup>

### Traditional medicine

The seventeenth century herbalist Nicholas Culpeper stated thyme strengthens the lungs, helps expel phlegm, and is an excellent remedy for shortness of breath. He recommended it for the treatment of whooping cough.<sup>6</sup>

Culpeper recommended infusion of wild thyme in cases of drunkenness and to take just before going to bed to prevent troublesome nightmares. Grieve states the oil of thyme is also employed as a rubefacient and counterirritant for the treatment of rheumatism.<sup>9</sup>

Thyme was used along with clove, lemon and chamomile essential oils, as a disinfectant and antiseptic in hospitals until World War I. As it could kill yellow fever organisms, and was seven times stronger than carbolic acid, it was sprayed onto the clothes of soldiers during the Crimean War to protect against disease and lice.<sup>9</sup>

### Herbal

Valnet describes thyme as one of the herbs that is blessed with a large number of therapeutic properties.<sup>14</sup> The German Commission E recommends thyme herb for the relief of symptoms of bronchitis and whooping cough and for catarrh of the upper respiratory tract.<sup>19</sup>

The WHO monograph for thyme herb reports that it is used in traditional and folk medicine for the treatment of dyspepsia and other gastrointestinal disturbances, coughs due to cold, bronchitis and whooping cough, and laryngitis and tonsillitis. Topical applications of thyme have been used in the treatment of minor wounds, the common colds and disorders of the oral cavity.<sup>20</sup>

The British Herbal Pharmacopoeia recommends the use of *T. serpyllum* herb for bronchitis, bronchial catarrh, whooping cough, and sore throats.<sup>21</sup>

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## PHARMACOLOGY AND CLINICAL STUDIES

Many pharmacological studies involving thyme essential oil have been published. A systemic review of these studies will not be attempted. Rather, I have chosen a selection of studies that support the traditional and clinical uses.

### Acetylcholinesterase inhibitory activity

Bone & Mills cite a study in which thyme essential oil and its constituents carvacrol and thymol displayed inhibitory activity on acetylcholinesterase activity in an in vitro study, with carvacrol

being 10-fold more potent than thymol, but two orders of magnitude less potent than the plant alkaloid galantamine used for the treatment of Alzheimer's disease.<sup>22</sup>

### Antifungal activity

An in vitro study confirmed that thyme oil completely inhibited the growth of different fungal isolates at concentrations of 0.25, 0.5 and 1%.<sup>23</sup> In one study, the sabinene hydrate chemotype, the linalool chemotype and the geraniol chemotype displayed the lowest antifungal activity, whereas the thymol chemotype showed the strongest antifungal activity.<sup>5</sup>

### Anti-inflammatory activity

An in vitro study found that carvacrol in thyme oil was the major component responsible for suppression of COX-2 expression and an activator of PPAR $\alpha$  and  $\gamma$ . PPAR $\gamma$ -dependent suppression of COX-2 promoter activity was observed in response to carvacrol. The results of this study provide us with an important understanding of the role of carvacrol for management of inflammatory and lifestyle diseases.<sup>24</sup>

A study identified that thyme essential oil has anti-inflammatory effects in vivo, however, the isolated compounds thymol and carvacrol displayed antagonist effects. Thymol has an irritant effect that involves histamine, prostaglandins and inflammatory mediators. It was concluded that carvacrol may be the compound responsible for the anti-inflammatory effects of thyme oil. It was also suggested that the inhibitory effect of carvacrol on leukocyte migration contributes to its anti-inflammatory action, in addition to the irritant effect of thymol.<sup>25</sup>

### Antimicrobial activity

It is not surprising that Lis-Balchin states that hundreds of research papers have investigated thyme oil and its extremely effective antimicrobial activity in vitro.<sup>15</sup>

The results of an in vitro study confirm that *T. vulgaris* oil exhibited extremely strong antibacterial activity against all of the clinical strains of *Acinetobacter*. The oil also demonstrated very good efficacy against multidrug-resistant strains of tested bacteria. The bacteria were sensitive to thyme oil at concentrations of 0.25, 0.5, 0.75 and 1  $\mu$ l/ml. It was stated that these are relatively low concentrations compared to the high concentration of antibiotics usually required.<sup>26</sup>

The high antimicrobial activity is due to the presence of phenols such as carvacrol and thymol. It has been suggested these compounds are responsible for inactivation of enzymes in charge of energy production and structure synthesis.<sup>27</sup> Studies have concluded that thymol possesses the largest activity spectrum.<sup>27,28</sup>

While most studies state that the antimicrobial activity of thyme oils appears to be associated with carvacrol and thymol, a study examining the activity of Moroccan thyme indicated that the antimicrobial activity of the oil could be due to monoterpene hydrocarbons such as myrcene, camphene, borneol,  $\alpha$ -pinene and  $\beta$ -pinene.<sup>29</sup>

Many studies also have identified that essential oils are relatively more active against gram positive than gram negative bacteria. It has been suggested that gram-negative bacteria are more resistant to essential oils because the cell walls of gram-negative bacteria are predominately made up of lipopolysaccharides which avoids the accumulation of essential oils on the cell membrane.

However, the results of one study indicated that gram-negative bacteria are more sensitive to thyme essential oil.<sup>29</sup>

Bacterial species	Gram type	MIC (mg mL-1)
<i>Staphylococcus aureus</i>	+	1.33
<i>S. epidermidis</i>	+	1.33
<i>Streptococcus sp.</i>	+	2.67
<i>Pantoea sp.</i>	—	0.66
<i>Escherichia coli</i>	—	0.33
<i>E. coli</i>	—	1.33

Minimal inhibitory concentration (MIC) of essential oil from thyme.

Jaric et al. explain while many scientists ascribe the antimicrobial activity of the *Thymus* genus to high concentrations of carvacrol in its essential oil. While another component of thyme oil, p-cymene has weak antibacterial properties, researchers believe that it most likely acts as in synergy as a biological precursor for carvacrol, causing the bacterial wall membrane to become destabilized.<sup>17</sup>

An in vitro study confirmed that *T. vulgaris* oil exhibited strong antibacterial activity against *Salmonella enteritidis*, *Salmonella thyphimurium*, *Staphylococcus aureus*, methicillin-resistant *S. aureus* (MRSA), *Escherichia coli* and *Bacillus cereus*.<sup>28</sup>

### Antioxidant activity

Thyme oil and thymol exhibit significant antioxidant activity according to in vitro and in vivo studies.<sup>30</sup> Lis-Balchin states that high antioxidant activity has been reported in all the thyme essential oils.<sup>15</sup>

A study found that thymol, the major component in thyme essential oil demonstrated better antioxidant activity than the entire essential oil, whereas carvacrol another main component, exhibited weaker antioxidant activity than the essential oil of thyme.<sup>17</sup>

The results of another study demonstrated that thyme essential oil exhibited significantly better antioxidant activity when compared to synthetic antioxidants such as butylated hydroxyanisole (BHA) and butylated hydroxytoluene (BHT).<sup>17</sup>

It has been reported that the antioxidant activity of *T. serpyllum* essential oil is not due to the mere presence of certain dominant phenols such as thymol and carvacrol, but is the result of the synergism of a larger number of components including some that are present in only small amounts such as nerolidol, germacrene D,  $\delta$ -cadinene and  $\beta$ -bisabolene.<sup>17</sup>

### Antitussive activity

The antitussive activity of thyme oil is attributed to the phenolic constituents – thymol and carvacrol.<sup>16</sup>

In vitro studies have found that thyme herbal extract and its volatile oil exert a relaxing effect on tracheal smooth muscle by inhibiting phasic contractions. It was also reported that the flavonoids in thyme may appear to relax tracheal muscles via inhibition of acetylcholine and histamine receptors, or via calcium channel antagonism. This suggests that the herbal extract may be more effective.<sup>31</sup>

### Antiviral activity

Thyme oil demonstrated antiviral activity against herpes simplex virus (HSV)-1, HSV-2 and an acyclovir-resistant strain of the virus.

It has been suggested that thyme essential oil interferes with the viral envelope.<sup>30</sup>

### Cytotoxic activity

The antitumoral activity of thyme essential oil as well as its two main components (carvacrol and thymol) was investigated in vitro against P815 mastocytoma cell. While all displayed a dose dependent cytotoxic effect, carvacrol was the most cytotoxic. It was also interesting to note that no cytotoxic activity was observed on human cells.<sup>32</sup>

One of the principal constituents of thyme essential oil, carvacrol has in vitro cytotoxic effect on tumour cells. A study found carvacrol from thyme oil demonstrated cytotoxic activity against leukemia in mice.<sup>17</sup>

### Expectorant activity

Experimental evidence suggests thyme oil has secretomotoric activity. Increase in mucous secretion of the bronchi after treatment with thyme extracts have been observed.<sup>20</sup>

### Hepatoprotective activity

The hepatoprotective activity of thyme oil was investigated against acetaminophen-induced hepatic damage in mice. The results of the study confirmed that pre-treatment with thyme oil protected the functional integrity of hepatocytes and cellular membrane from damage by toxic reactive metabolites, produced by acetaminophen biotransformation.<sup>33</sup>

### Insecticidal activity

Thyme oil has been reported to be lethal to mosquito larvae. Its major monoterpenes were also found to effectively repel mosquitoes.  $\alpha$ -Terpinene was active at 2%.<sup>8</sup>

Four chemotypes of *T. vulgaris* oil were tested for their insecticidal activity. The thymol chemotype was also found to be the most larvicidal against *Culex quinquefasciatus* larvae. In the control sample, the adult emergence from the larvae was 77%, whereas in the thyme oils there was only 5.3% to 16% emergence.<sup>34</sup>

Thymol has been tested against varroa mites (*Varroa destructor*) on honeybees, and found to be tolerated by bees, although it was reported that prolonged exposure could be toxic. Thyme oil was found to be non-toxic to the rove beetle (*Atheta coriaria*), a beneficial predator used mainly in greenhouses to control fungus gnats.<sup>35</sup>

Of four essential oils tested against mosquito (*Culex pipiens*), thyme oil was the most potent repellent, providing 91% protection for a period of over an hour.<sup>35</sup>

Out of 34 different monoterpenoid compounds tested, thymol was found to be the most lethal against the common house fly (*Musca domestica*). The LD50 was 2.9 ug per adult fly.<sup>35</sup>

Red thyme oil with 54% thymol content was found to be effective against the dust mite (*Dermatophagoides farina*). When applied as microcapsules to fabric, red thyme resulted in almost 84% mortality. However, it was not effective as clove oil which reported 94% mortality.<sup>35</sup>

### Oral hygiene

One of thyme's main constituents, thymol has been found in vitro to have activity against cariogenic and periodontopathogenic bacteria such as *Porphyromonas*

*gingivalis*, *Selenomonas artemidis*, *Streptococcus sobrinus*, and *Streptococcus mutans*. Thymol is indicated as one of the main ingredients in antiseptic mouthwashes such as Listerine. Studies have confirmed Listerine decreased plaque formation and gingivitis; however, it was also reported that evidence for thymol as a monotherapy mouth rinse is lacking.<sup>31</sup>

### Pharmacokinetics of thymol

While the pharmacodynamic activities of thyme extract and thyme essential oil have been demonstrated, the bioavailability of the active components of thyme in respective target organs has not been proven. A German study examine the systemic availability and the pharmacokinetics of thymol after oral application to humans. No thymol could be detected in the plasma or urine. However, metabolites of thymol sulphate and thymol glucuronide were found in the urine. Thymol sulphate, but not thymol glucuronide, was detected in the plasma. Thymol sulphate was detected up to 41 hours after administration. Urinary excretion occurred over a 24 hour period. No free thymol was found in the urine. Researchers suggest that the pharmacological effect observed in vivo after oral administration of a preparation containing thyme extract is due to thymol sulphate. The researchers recommended that the pharmacodynamics of phase I metabolites of thymol should be examined to better understand the clinical efficacy of thyme.<sup>36</sup>

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## ACTIONS COMMONLY CITED IN AROMATHERAPY

Analgesic, antifungal, antioxidant, antirheumatic, antiseptic, antispasmodic, antitussive, bactericide, cardiac, carminative, cicatrisant, emmenagogue, expectorant, hypertensive, insecticide, nervine, rubefacient, stimulant, sudorific, tonic, vermifuge<sup>2,5,37</sup>

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## AROMATHERAPY USES

Thyme is considered one of the most important oils in aromatherapy. Lavabre states the *Thymus* genus shows amazing adaptability and offers us broad-spectrum healing qualities.<sup>6</sup>

When using thyme oil in aromatherapy, it is imperative that you are aware of the chemotype you are using. Very often the chemotype is not specified and the commercial grade thyme oil, which is usually very high in thymol is used. The risk of irritation and sensitisation can be very high when using commercial grade thyme oil.

Schnaubelt states the *T. vulgaris* ct. thuyanol has outstanding antiviral and antibacterial qualities. He explains the thuyanol chemotype combines the mild qualities of the higher altitude linalool and geraniol chemotypes with the more aggressive antimicrobial thyme oils of lower altitude.<sup>7</sup>

Holmes states thyme ct. geraniol and thyme ct. thuyanol are very similar to the thyme ct. linalool; however, he makes the following clinical differentiations:<sup>38</sup>

- thyme ct. geraniol is recommended as a cardiac restorative and for heart weakness
- thyme ct. thuyanol is an arterial circulatory stimulant with warming as well as tonifying actions. It is especially useful for

viral and bacterial infections of the respiratory system and the urogenital system.

### Antimicrobial

Thyme oil has strong broad-spectrum antimicrobial activity and is recommended for the treatment of a wide range of infections, especially respiratory, gastrointestinal, urinary and genital. Holmes recommends using the linalool chemotype for:<sup>38</sup>

Fungal infections associated with *Candida* spp. such as intestinal dysbiosis, candidiasis, fungal stomatitis, chronic sinusitis, cystitis and vaginitis.

Bacterial infections associated with *S. aureus* and *Streptococcus pneumoniae* such as sinusitis, bronchitis, whooping cough, pneumonia, colitis, microbial intestinal toxicosis, intestinal dysbiosis, urinary infections, dermatitis or psoriasis.

Viral infections associated with immune or intestinal microflora deficiency, viral enteritis, pharyngitis, bronchitis or pleurisy.

Schnaubelt states thyme ct. thuyanol oil is a strong antiseptic oil that is well suited to external and internal use. He explains that in French style aromatherapy it is used in mild genital washes for chlamydia, cervicitis, vaginitis and salpingitis.<sup>16</sup>

### Digestive system

Thyme oil is a digestive stimulant and a carminative. It promotes appetite, eases abdominal distention, and relieves flatulence.<sup>2,37</sup> Mojay states the strong antimicrobial properties of thyme can help to counteract intestinal putrefaction, gastroenteritis and candidiasis.<sup>37</sup>

### Immune system

Thyme oil is recommended for all infections. It stimulates the production of white blood corpuscles, so it strengthens the body's immune system.<sup>29</sup> Mailhebiau states *T. vulgaris* ct. thymol is an excellent immunostimulant, particularly where there have been repeated infectious pathologies.<sup>3</sup>

### Musculoskeletal system

Thyme oil is used to ease gout, rheumatic pain and arthritis and sporting injuries. It is recommended for fixed pain of a contracted or cramping nature.<sup>2</sup>

### Nervous system

It is considered a nerve tonic and an intellectual and mental stimulant, which is beneficial in cases of nervous depression and mental fatigue. It is recommended for headaches and stress-related complaints.<sup>2,6</sup>

### Psychological

Holmes states *T. vulgaris* ct. linalool oil promotes emotional stability and renewal. He recommends using it to alleviate emotional confusion, mood swings, feeling disconnected and general feeling of distress and emotional stuck, and to help us let go of negative feelings.<sup>38</sup>

Mailhebiau states the linalool chemotype is helpful for children suffering psychological problems due to parental lack of understanding and conflicts and who are unbalanced by family disharmony, due to its strong antidepressive and stimulating effect on the psyche.<sup>39</sup>

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## Respiratory system

As a respiratory tonic, antiseptic, and expectorant, thyme may be used for any cold condition involving weakness, congestion and/or infection of the lungs. It will benefit chronic fatigue, shallow breathing, catarrhal coughs, and bronchitis, especially when there is copious, clear or white catarrh.<sup>2,40</sup>

*T. vulgaris* ct. linalool has excellent infection-fighting properties. It has a higher percentage of monoterpenic alcohols and is considered gentle and safe to use with children. When blended with myrtle, it helps calm spasmodic coughing fits.<sup>3</sup>

*T. vulgaris* ct. thymol has excellent bronchopulmonary and immunostimulant properties and is ideal for treating colds, coughs, sore throats, bronchitis, whooping cough and asthma.<sup>3</sup>

According to Valnet, an aqueous solution of 5% thyme oil kills *Typhus bacillus* in 2 minutes. It can kill colon bacillus in 2-8 minutes, staphylococcus in 4-8 minutes and streptococcus and *Diphtheria bacillus* in 4 minutes.<sup>18</sup>

## Skin care

Schnaubelt recommends using *T. vulgaris* ct. linalool for skin infections, as it is non-irritating.<sup>16</sup>

## Tonic

Thyme oil is particularly effective for people who are fatigued, depressed or lethargic.<sup>38</sup> It is very useful during convalescence, and it stimulates the appetite. It helps to revive and strengthen both the body and mind and is reputed to stimulate the brain and improve memory. It stimulates the circulation and may be used to raise low blood pressure.<sup>2,18,40</sup>

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## ENERGETICS

Mojay refers to thyme oil as one of the most energetically *hot* and invigorating essential oils.<sup>37</sup>

Thyme increases *Qi*, stimulates and warms the *Lungs* and dispels *wind cold*. It is indicated for the onset of infections with stiff muscles, aches and pains, chills and fatigue.<sup>41</sup>

Thyme will dispel any *cold* condition involving weakness, congestion and/or infection of the *Lungs*. It is particularly beneficial for chronic fatigue, shallow breathing, catarrhal coughs and bronchitis. It also tonifies the *Yang Qi* of the *Heart*, strengthening the heartbeat and improving circulation.<sup>37</sup>

Thyme is associated with the Metal and Water Elements. Mojay explains thyme has always been a traditional remedy to dispel melancholy; hence, it helps revive the bodily soul the *Po*, which is associated with the Metal Element. When the *Po* is weak, we have feelings of pessimism and self-doubt and withdrawn.<sup>37</sup>

Thyme has always been associated with instilling courage and strength associated with willpower. According to the principles of TCM, these are qualities associated with the Water Element and spirit, *Zhi*. When the *Zhi* is strong, we have self-confidence and have no fear.

According to Holmes, thyme oil tonifies the *Qi* and strengthens the *Shen*. Whenever the *Qi* and *Shen* is weak, we experience physical and mental fatigue, debility and depression. Holmes also states that thyme oil helps to strengthen the *Lung Qi*. Whenever the *Lung Qi* is weak, we experience shallow breathing, chronic weak cough and are susceptible to respiratory tract infections.<sup>38</sup>

## PERSONALITY

According to Mailhebiau, *T. vulgaris* ct. thymol corresponds to a strong and stocky man, living close to nature, who is a very physical person whose mind is healthy and clear. He works hard and never gets lost in sterile intellectualism. He lives simply in a world he does not understand well, while relying on simple and sure values. On the other hand, he describes *T. vulgaris* ct. linalool as an introverted young man, with a difficult temper, who may look outwardly as fragile as he is strong in his deep self.<sup>39</sup>

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## SUBTLE

Mojay describes the subtle effects of thyme as energising and dispelling despondency. He suggests that the oil will restore morale at the deepest level. Thyme seeks to imbue both spiritual fortitude and bodily vigour.<sup>37</sup>

Worwood exquisitely describes the subtle qualities of *T. vulgaris* oil:

*There is fire within the soul of thyme, the fire to summon the most mighty angels to our assistance – the force of compassion, the forgiveness in might, the enlightenment of the mind and spirit, the revealing of truth. In the power and might of the heavens, where pretense does not exist, we cannot hide – least of all from ourselves.*<sup>42</sup>

Zeck states the strong and fiery scent of thyme oil activates our vital force to encourage our willpower and strengthens our resolve in breaking negative patterns or bad habits. She explains that thyme oil provides us with a dynamic quality of energy that strengthens our physical body and willpower. It will also harness our healing powers.<sup>43</sup>

Keim Loughran & Bull state thyme oil relieves fear and apathy and helps to clear energy blockages. It strengthens the solar plexus chakra by promoting self-confidence and courage. At the same time, it also helps to balance the third eye chakra by reactivating the left brain after a subtle energy session. It also promotes focus and concentration. It also strengthens the crown chakra by restoring spiritual fortitude.<sup>44</sup>

Cunningham states thyme has the effect of closing down the psychic mind in favour of the conscious intellectual mind. This may be particularly beneficial for people who tend to be dreamy, detached or immersed in their spiritual life to the detriment of their physical wellbeing.<sup>45</sup>

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## BLENDING TIPS

### Aromatherapy

For the relief of muscular aches and pains and arthritis, consider blending thyme oil with essential oils such as black pepper, cajeput, kunzea, ginger, spike lavender, sweet marjoram, peppermint, pine or rosemary.

For the relief of respiratory tract congestion and coughs, consider blending thyme oil with essential oils such as cajeput, cypress, 1,8-cineole-rich eucalypts, fragonia, kunzea, rosalina, myrtle, peppermint, pine, spruce or tea tree.

As an immune stimulant to help prevent infections consider blending thyme oil with essential oils such as cinnamon bark, clove bud, fragonia, 1,8-cineole-rich eucalypts, lemon, rosalina, rosemary or tea tree.

For the relief of anxiety, nervous tension and stress-related conditions, consider blending thyme ct. linalool oil with essential oils such as bergamot, fragonia, geranium, lavender, palmarosa, neroli, sweet orange or sandalwood.

### Perfumery

Thyme oil is generally not used in perfumery; however, Arctander states it does find some use in soap perfumes where its power and freshness can introduce a hint of medicinal notes. He states that very small amounts of thyme oil may lend body and a sweet freshness to lavender, fougère, citrus and spicy style colognes. However, Arctander explains the high phenol content in thyme also makes it unstable and can cause discoloration.<sup>10</sup>

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## HOW TO USE

### Bath

Thyme ct. thymol is sensitising, therefore, it is not recommended for use in a bath.

Valnet recommends 500 g of thyme herb boiled in 4 L of water and then added to the bath water for the relief of arthritis, gout, rheumatism and debility.<sup>18</sup>

### Topical

Thyme ct. thymol – massage, ointment

Thyme ct. linalool – massage, ointment, skin care

### Inhalation

Direct inhalation, diffuser, oil vaporiser

## SAFETY

### General safety

Thyme ct. linalool and thyme ct. thujanol oils are reported to have no known hazards and no contraindications.<sup>46</sup>

Lawless states thyme oil is non-toxic, non-irritating but is a sensitiser for some individuals.<sup>2</sup>

Lavabre states thyme ct. thymol oil should never be applied externally.<sup>6</sup>

### Contraindications

Tisserand & Young caution oral use of thyme ct. thymol oil, thyme ct. carvacrol oil and thyme ct. thymol/carvacrol oil for persons on anticoagulant medication, major surgery, peptic ulcers, haemophilia and other bleeding disorders. They explain thymol and carvacrol both inhibit platelet aggregation. These oils also have moderate risk as a mucous membrane irritant. They suggest the maximum dermal use level be 1.3%.<sup>46</sup>

Basch & Ulbricht state that caution is warranted with the use of thyme oil, which should not be taken orally and should be diluted for topical application.<sup>31</sup>

Ingestion of thyme oil may elicit heartburn, nausea, vomiting, diarrhoea, and gastrointestinal irritation. Anecdotal reports also suggest that bradycardia may be associated with the ingestion of thyme and cardiac arrest may occur.<sup>31</sup>

Braun & Cohen state thyme oil can cause nausea and vomiting, headache, dizziness, convulsions, cardiac or respiratory arrest if taken internally.<sup>30</sup>

Between 2006 and 2008, The American society for the Prevention of cruelty to animals Animal Poison Control Center reported 38 incidents involving exposure of cats, and eight involving dogs. The incidents were reported to be due to the use of flea products containing thyme oil and other active ingredients that were eligible for EPA exemption from registration. Symptoms included skin erythema, vomiting, diarrhea, lethargy, oedema, seizures, weakness, recumbent tachycardia, agitation, anorexia, hyperactivity, hypersalivation, panting, retching, tremors, and vocalization.<sup>35</sup>

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