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**INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.804912>Available online at: <http://www.iajps.com>**Review Article****A REVIEW ON *THYMUS VULGARIS* FOR ITS REPORTED
PHARMACOLOGICAL ACTIVITIES AND MAJOR CHEMICAL
CONSTITUENTS****T. Usha Kiran Reddy***, G. Sindhu, S. Rajesh, B. Aruna
S V U College of Pharmaceutical Sciences, S V University,
Tirupati – 517502, A.P, India**Abstract:**

Thymus vulgaris generally known as thyme, German thyme, garden thyme or just thyme, is a species of flowering plant belonging to mint family Lamiaceae, which is native to southern Europe from the western Mediterranean to southern Italy. It is estimated there are more than 2,50,000 flower plant species. Studying medicinal plants helps to be aware of plant toxicity and protect human and animals from natural poisons. The aim of this study was to overcome about its phytochemical and pharmacological profiles based on its active chemical constituents. *Thymus vulgaris* oil is a combination of monoterpenes and those will acts as antioxidative, anti-dysmenorrhea, hepatoprotective effect, antimicrobial, antitussive, antispasmodic, and antibacterial activities. It also shows anti-inflammatory effects, anti-fungal effect, antiadhesion activity, larvicidal effect.

Keywords: *Thyme, Thymus vulgaris, larvicidal, anti-oxidant***Corresponding Author:****T. Usha Kiran Reddy**
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INTRODUCTION:

Thymus vulgaris (Thyme) is a little perpetual therapeutic botanical herb belongs to lamiaceae family which is one of the biggest families and generally notable blossoming plants, with around the range of 220 genera and practically 4000 species worldwide. Additionally it is known as common thyme and it is indigenous to Mediterranean region, to the North Africa and several parts of Asia along with carefully discriminating in areas of the entire world. Typically grow as a subshrub from 5 to 30cm in height with fibrous ligneous root and small, greenish-grey leaves having narrow edged [1]. It has numerous hard, branched stems (10-20cm tall) and flowers blooming from May to September having distinctive fragrance may white or purple in color (Figure 1). Due to its strong aroma that is because of thymol, it is grown widely as culinary herb.

Plant description:

Thyme is a tiny perennial shrub, with a semi

evergreen groundcover that seldom grows quite 40 cm tall it's each horizontal and upright habits. The stems become woody with age. Thyme leaves are terribly little, usually 2.5 to 5 mm long and vary significantly in form and hair covering, depending on the variety, with every species having a rather completely different scent [2]. *T. vulgaris* leaves are oval to rectangular in form and somewhat fleshy aerial components are used for volatile oil production, principally by steam distillation. The contemporary and dried herb market uses it for cookery functions. Thyme grows well during a temperate to heat, dry, sunny climate, and wherever the plants don't seem to be shaded. It desires full sun to grow to its best potential. Thyme doesn't like excessive wet as a result of its condition it will get rot diseases. Thyme prefers lightweight, well drained soils with a pH of 5.0 to 8.0. Thyme species do best in coarse, rough soils that may be unsuitable for several alternative plants [3].



Fig1: *Thymus vulgaris*

Taxonomical Classification [4]

Kingdom	Plantae
Phylum	Tracheophyta
Class	Magnoliopsida
Order	Lamiales
Family	Labiatae
Scientific Name	<i>Thymus vulgaris</i>
Species Authority	L.
Common Names	English – Common Thyme, English Thyme, Garden Thyme, Thyme French – Farigoule, Frigoule, Thym Commun Spanish – Tomillo, Tomillo Común
Synonyms	<i>Origanum thymus</i> Kuntze <i>Thymus collinus</i> Salisb.

Chemical Constituents of essential oil:

The essential oil obtained from *Thymus vulgaris* showed a high content of oxygenated monoterpenes (56.53%) and low contents of monoterpene hydrocarbons (28.69%), sesquiterpene hydrocarbons

(5.04%) and oxygenated sesquiterpenes (1.84%) [8]. The predominant compound among the essential oil components was thymol (51.34%) while the amount of all other components of the oil was less than 19%[5].

Table1: List of selected Chemical Constituents in *Thymus vulgaris*

Chemical constituent	Biological activities	References
Thymol[6]	Antiseptic, antibacterial, antifungal and antioxidant properties	(Aeschbach et al., 1994; Cosentino et al., 1999; Venturini et al., 2012).
Linalool[7]	Antiviral effect, anti-inflammatory, antioxidant, anti-nociceptive as well as analgesic activity	(Elisabetsky et al., 1995; Usta et al., 2009; Bagetta et al., 2010; Coelho et al., 2011).
Eugenol[8]	Neuro-protective, anticancer, antibacterial and anti-anaphylactic activities	(Laekeman et al., 1990; Atsusane, 1991; Wie et al., 1997; Jadhav et al., 2004).
Carvacrol[9]	Antimicrobial, antithrombotic, antiinflammatory, acetyl cholinesterase inhibitory properties.	(Enomoto et al., 2001; Sosa et al., 2005; Jukic et al., 2007).
Apigenin[10]	Anti-carcinogenic, antiinflammatory, anti-progression, anti-inflammatory, anti-viral and anti-oxidant properties	(Birt et al., 1986; Patel et al., 2007; Shukla and Gupta, 2010).
Rosmarinic acid[11]	Astringent, anti-allergic, antimutagen, anti-oxidative and anti-inflammatory	(Parnham and Kesselring, 1985; Petersen and Simmonds, 2003).

Table 2: List of Pharmacological activities reported with this plant

Pharmacological Activity	Report
Antioxidant effect[12]	The total phenolic compounds (TPC) content and the antioxidant activity (AA) of extracts obtained from ground fresh thyme (FT) and depleted thyme (DT) was evaluated and the results suggest that enzymatic treatment is an interesting alternative for producing antioxidant extracts from DT.
Anti Bacterial Activity[13]	The essential oils of four chemotypes of <i>Thymus vulgaris</i> L. (Lamiaceae) were analyzed for their composition and antibacterial activity to assess their different properties. The results obtained indicate that, despite their different properties, the essential oils of selected <i>T. vulgaris</i> chemotypes are potent antimicrobials to be employed as useful additives in food products as well as for therapeutic applications.
Antimicrobial activity[14]	The antimicrobial efficiency of the EOs from oregano, sage, and thyme cultivated under different conditions was examined. no significant differences were observed concerning the antimicrobial action of all EOs originating from irrigated versus non-irrigated cultivated aromatic plants.
Larvicidal effect[15]	The effect of <i>Thymus vulgaris</i> essential oil (TEO) against anisakidae larvae was evaluated. The results obtained showing a significant activity against <i>Anisakis</i> larvae, suggest further investigation on TEO as a larvicidal agent and on its potential use in the industrial marinating process.
Anti-adhesion activity[16]	TE, the agro-food waste material TE-R, and the by-product OE represent sources of bioactive phytochemicals that are effective at low concentrations and can be used as therapeutic agents to prevent bacterial adhesion.
Hepatoprotective Effect[17]	The hepatoprotective effect of <i>Thymus vulgaris</i> essential oil was investigated the essential oil also exhibited antioxidant activity, reflected by its DPPH radical-scavenging effects and in the lipid peroxidation assay. These results suggest that TEO has hepatoprotective effects on acetaminophen-induced hepatic damage in mice.
Anti-cancer[18]	Cytotoxic effect of <i>Thymus vulgaris</i> L. (thyme) towards head and neck squamous cell carcinoma was investigated. Thyme essential oil inhibits human HNSCC cell growth. Based on pharmacogenomic approaches, novel insights into the molecular mode of anticancer activity of thyme are presented.
Anti-inflammatory[19]	The effect of <i>Thymus vulgaris</i> essential oil (TEO) and its isolated constituents thymol and cavacrol (CVL) were studied in the following experimental models: ear edema, carrageenan-induced pleurisy, and chemotaxis in vitro. It suggest that the antiinflammatory effects of TEO and CVL are attributable to the inhibition of inflammatory edema and leukocyte migration.
Anti-Leishmaniasis[20]	The efficacy of herbal extracts of <i>Thymus vulgaris</i> (Thyme) and <i>Achillea mille folium</i> (Yarrow), propolis hydroalcoholic extract and systemic glucantime against cutaneous leishmaniasis in Balb/c micewas evaluated. results are suggestive that <i>Thymus vulgaris</i> , <i>Achillea mille folium</i> and propolis extracts are effective for treatment of cutaneous leishmaniasis in mice.

CONCLUSION:

The present review is about the various pharmacological activities reported on *Thymus vulgaris* plant which contains high amount of flavonoids, and it exhibits antioxidant, antibacterial activity, anticancer and larvicidal effects. So, thyme can be used as an easily available source of natural antioxidants and antibiotics in food products and drugs. However many experiments illustrating its potentiality towards many diseases, more clinical and pathological studies must be conducted to investigate the unexploited potential of the *Thymus vulgaris* plant.

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