International Journal of Enhanced Research in Science, Technology & Engineering
ISSN: 2319-7463, Vol. 13 Issue 2, February-2024, Impact Factor: 8.375

Medicinal, Biological, Phytochemical Aspects of Oregano

Dr. Neeraj Varma

National Defence Academy, Pune, India

ABSTRACT

Oregano (*Origanum vulgare*) is widely used in various culinary delicacies as a peppery herb. It comprises chemicals that reduces the cough, benefits in digestion, fighting with certain bacteria and viruses, for wound curative, against parasite infections etc.

Key Words: Oregano, *Origanum vulgare*, anti-microbial, anti-oxidant, anti-inflammatory, terpenoids

INTRODUCTION

Oregano(*Origanum vulgare*), is an aromatic perennial herb of the mint family (Lamiaceae) known for its flavourful dried leaves and flowering tops. Oregano is mainly found at the hills of the Mediterranean countries and western Asia and in some parts of Mexico and the United States.

In traditional system of medicine, oregano has been used for respiratory conditions (asthma, bronchitis, cough), gastrointestinal (i.e. diarrhoea, indigestions, stomach-ache), anti-bacterial, anti-inflammatory, menstrual disorders, and diabetes [1-3].

Numerous studies have been conducted to determine the biological properties of *O. vulgare*. Mainly on the antimicrobial activity, such as antifungal, bactericidal, and antiviral and recently other properties ware also reported, viz. antioxidant, antiproliferative and anti-inflammatory [4]

Oregano contains essential oil from the *O. vulgare*which is used as a raw material for medicinal and health products. Scientific studies specifiedthat 50% of its oil comprises of phenolic compounds (primarily carvacrol and thymol), along with sesquiterpene, terpinene, terpineol alcohol, flavonoids [5-6].

The aim of this short article is to explore and formulate the Medicinal, Biological and Phytochemical aspects of Oregano (*Origanum vulgare*).

DISCUSSION

Medicinal, Biological and Phytochemical Properties

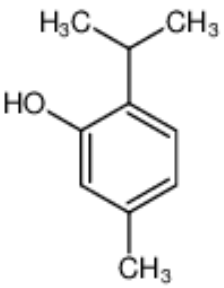
First scientific report about oregano bioactivity was published in 1945 [7]. Since then, lot of scientific work was carried out to evaluate the phytochemical studies in the isolation and determination of various bioactive substances from Origanum species. Mainly the compounds isolated are terpenoids, phenolic acids, triterpene acids, hydroquinones, flavonoids, hydrocarbons, sterols, pigments, fatty acids, tocopherols, and inorganic compounds. These groups are largely found in oregano essential oils, including carvacrol and thymol as major bioactive constituents. Therefore, Origanum species are being used and tested for various biological activities like; acaricidal, anticancer, antidiabetic, antiviral, antimicrobial, antioxidant, insecticidal, larvicidal, hepatoprotective, genotoxic/antigenotoxic, cardiorespiratory, anti-inflammatory, fumigant toxicity, cholinesterase inhibitory, and analgesic activities and effects on endothelial function, colitis, and gastrointestinal tract [8].

Table 1: Composition of O. vulgare L. essential oil [9]

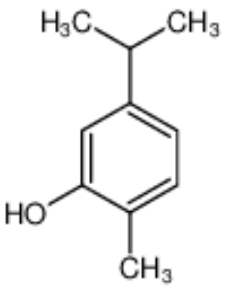
S. No.	Name of Constituent	Percentage
1	α-Thujene	1.2
2	α-Pinene	1.7
3	Camphene	0.09

4	1-Octen-3-ol	0.2
5	β-Pinene	0.1
6	Myrcene	1.5
7	α-Phellandrene	0.2
8	δ-3-Carene	0.07
9	p-Cymene	9.1
10	α-Terpinene	1.3
11	Limonene	1.1
12	β-Phellandrene	0.2
13	1,8-Cineole	0.2
14	Thymol	0.4
15	Carvacrol	66.2
16	γ-Terpinene	7.3
17	trans-Sabinene hydrate	0.1
18	Terpinolene	0.1
19	cis-Sabinene hydrate	0.3
20	Linalool	1.2
21	Borneol	0.1
22	p-Cymene-8-ol	0.09
23	Terpinen-4-ol	0.8
24	Iso-borneol	0.02
25	α-Terpineol	0.1
26	Estragole	0.04
27	β-Caryophyllene	4.1
28	Aromadendrene	0.08
29	Viridiflorene	0.2
30	Caryophyllene oxide	0.2

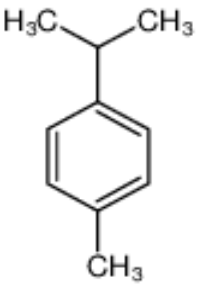
Table-2:Major constituents of the essential oils of oregano



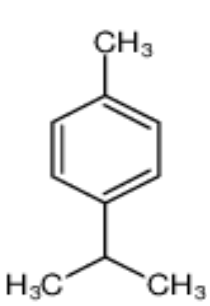
Carvacrol



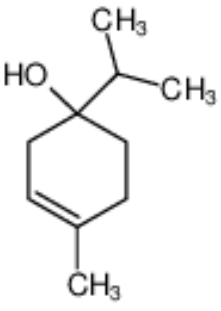
Thymol



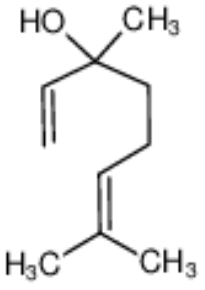
γ-Terpinene



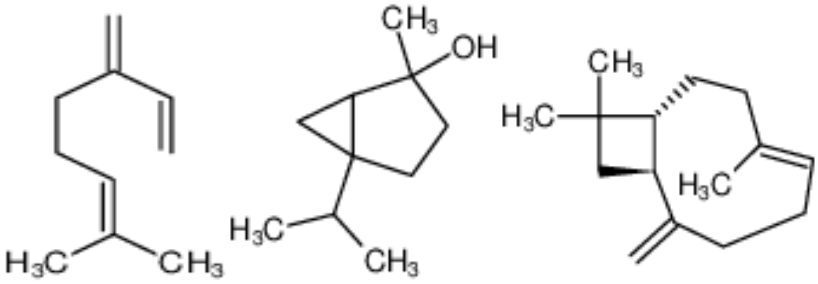
p-Cymene



Terpinen-4-ol



Linalool



β-Myrcene ***trans*****-Sabinene Hydrate** **β-Caryophyllene**

CONCLUSION

From the above data based on the literature survey, it can be established that the Oregano (*Origanum vulgare*) essential oil contains various pharmacological active agents. This makes the plant highly beneficial as it exhibitsnumerous biological activities.

Further studies on the plant may lead to designing of newer lead molecules, which may be advantageous for human kind.

BIOGRAPHY

Dr. Neeraj Varma, M.Sc., Ph.D., PGDEA, is a Retired Associate Professor from National Defence Academy, Pune.

REFERENCES

[1]. Morshedloo MR, Craker LE, Salami A, Nazeri V, Sang H, Maggi F. Effect of prolonged water stress on essential oil content, compositions, and gene expression patterns of mono- and sesquiterpene synthesis in two oregano (Origanum vulgare L.) subspecies. *Plant physiology and biochemistry: PPB*. 2017; 111:119–28. doi: 10.1016/j.plaphy.2016.11.023.

[2]. Han F, Ma GQ, Yang M, Yan L, Xiong W, Shu JC, et al. Chemical composition and antioxidant activities of essential oils from different parts of the oregano. *Journal of Zhejiang University Science B*. 2017;18(1):79–84. doi: 10.1631/jzus. B1600377.

[3]. Vujicic M, Nikolic I, Kontogianni VG, Saksida T, Charisiadis P, Vasic B, et al. Ethyl Acetate Extract of Origanum vulgare L. ssp. hirtum Prevents Streptozotocin-Induced Diabetes in C57BL/6 Mice. *Journal of food science*. 2016;81(7):H1846–53. doi: 10.1111/1750-3841.13333.

[4]. Nayely Leyva-López, Erick P. Gutiérrez-Grijalva, Gabriela Vazquez-Olivo, and J. Basilio Heredia, Molecules. 2017 Jun; 22(6): 989.Published online 2017 Jun 14. doi: 10.3390/molecules22060989

[5]. Arcila-Lozano CC, Loarca-Pina G, Lecona-Uribe S, et al. Oregano: properties, composition, and biological activity. *Arch LatinoamNutr.* 2004;**54**(1):100–111.

[6]. Ozkan G, Baydar H, Erbas S. The influence of harvest time on essential oil composition, phenolic constituents and antioxidant properties of Turkish oregano (*Origanum onites* L.) *J Sci Food Agric*. 2010;**90**(2):205–209.

[7]. F. Caujolle and C. Franck, “Action de l’essence de marjolaine (Origanum majorana L.) des terpenes de l’essence de marjolaine et de l’essence de marjolaine d{é}terpenee sur la motricit{é} intestinale,” C. R. Seances Soc. Biol. Fil., vol. 139, no. 3-4, pp. 210-212, 1945.

[8]. Review Antimicrobial Activity and Other Biological Properties of Oregano Essential Oil and Carvacrol Mehmet Karadayı 1, Volkan Yıldırım 1, *, Medine Güllüce Anatolian Journal of Biology ISSN: 2687-444X 2020 2:52-68 52

[9]. Stefanie Bailb , Gerhard Buchbauerb , Albert Krastanova , Albena Stoyanovac , Erich Schmidtd and Leopold Jirovetz,Chemical Composition, Olfactory Evaluation and Antioxidant Effects of an Essential Oil of Origanum vulgare L. from Bosnia Ivanka Stoilovaa*, Natural Products Communications 3(7), 1043-1046, 2008