

Review Article

Antibacterial Properties of *Mentha pulegium*

Umar Yusuf *, Musa Muhammad

Department of Pharmacology and Therapeutics, College of Health Sciences, Usmanu Danfodiyo University, Sokoto, Nigeria

***Corresponding Author**

Umar Yusuf

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Abstract: Most medicines used in the treatment of human diseases today are extracted from herbs that have been considered as an herbal medicine in traditional medicine. As the use of synthetic drugs and the emergence of pathogenic strains has increased, efforts to replace chemical drugs with cost-effective herbal remedies have increased. In this regard, every year many researchers from this huge plant source are sending a range of secondary compounds to the consumer market for the treatment of human diseases. Therefore, the identification of herbs with antimicrobial effects can help to produce new drugs with a broad spectrum of effects. This study, based on scientific references, describes information on the antimicrobial effects of *Mentha pulegium*.

Keywords: Medicinal Plants, antibacterial effects, *Mentha pulegium*.

INTRODUCTION

One of the major problems in antibiotic therapy today is the resistance and subsequent side effects of the drug. Accordingly, after researching the effects of plants, man has used them in various industries [1-2]. After the discovery of penicillin in the 40s, and its use in treatment, new antibiotics were introduced every day to treat infections [3-5]. The result was the expansion of the clinical use of natural and synthetic antibiotics in the treatment of clinical infections [6, 7]. The overuse of these antimicrobial drugs has led to increased drug resistance against different antibiotics in most bacteria [8-10]. This has been one of the reasons for the growing use of herbs as low-risk, affordable, and inexpensive natural ingredients in the treatment of bacterial infections compared to synthetic antibiotics [11-13]. Also, these herbal remedies are more popular with people [14-16]. These reasons have been the reason for the increasing wave of new worldwide studies and the introduction of antibacterial effects of various plants in recent years [17]. It is estimated that at least one third of all products consumed are of plant origin. The use of herbal extracts for adjuvant treatment of microbial infections has attracted much attention today [18, 19].

Mentha pulegium

Mentha pulegium is from the mint family and is one of the oldest medicinal plants with sedative, analgesic and antiseptic properties especially for the treatment of diabetes [20, 21]. Found in Europe, Australia, South Africa, the Mediterranean region, Turkey and eastern Iran [22]. *Mentha pulegium* treats sore throats, even microbial sore throats, and fights viruses and body infections [23]. The antioxidant in this plant strengthens the immune system and contains Rosmarinic acid and Thymol. Studies have shown that the compounds in *Mentha pulegium* fight cancer cells, as well as quercetin, which inhibit cancer cell growth and improves cell death [24]. *Mentha pulegium* leaves and flowers as well as its stems can be a good alternative to many antibiotics. Experiments have shown that *Mentha pulegium* extract is active against herpes virus, influenza virus, Newcastle disease and various other viruses. The nature of this plant is warm and dry [25]. In addition to its therapeutic effects, the plant is also used as a fragrance, spice and seasoning food the most effective combination of this plant is Pulegone and 1-8 cineol, which has antimicrobial properties [26, 27]. The leaves and branches of this plant are used as food and tea [28]. Although *Mentha pulegium* oil is highly toxic, consumption of fresh and dried herbs is common. It is used to treat colds, dizziness, headaches, gastrointestinal problems, mild fever, and sore throat and to improve abdominal flatulence, nausea, menstrual cramps and insomnia [29-30]. It grows well in mountainous areas, plains, and in humid places, and is widely used as a medicinal plant, especially for strengthening the immune system [31].

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Antibacterial effects

Antibacterial effects of *Mentha pulegium* on Gram-positive bacteria are more than Gram-negative bacteria, with the most reported effect on *Staphylococcus aureus*.

Table-1: The highest antibacterial effect of *Mentha pulegium* in studies

Authors	Most antibacterial effect		References
	Gram-positive bacteria:	Gram-negative bacteria:	
Motamedi <i>et al.</i>	<i>S. aureus</i>	<i>P. mirabilis</i>	32
Hajlaoui <i>et al.</i>	<i>S. aureus</i>	<i>E. coli</i>	33
Mahmodi <i>et al.</i>	<i>S. aureus</i>	--	34
Basti <i>et al.</i>	<i>S. aureus</i>	<i>Salmonella typhimurium</i>	35
Nozohor <i>et al.</i>	<i>S. aureus</i>	<i>E. coli</i>	36
Gulluce <i>et al.</i>	<i>S. aureus</i>	<i>E. coli</i>	37
Ceyhan-Güvensen <i>et al.</i>	<i>S. aureus</i>	<i>Salmonella typhimurium</i>	38
Amalich <i>et al.</i>	<i>S. aureus</i>	<i>E. coli</i>	39
Aycan <i>et al.</i>	<i>S. epidermidis</i>	<i>E. coli</i>	40
Jazani <i>et al.</i>	--	<i>Klebsiella sp</i>	41

CONCLUSION

Although many plants have been investigated to find antimicrobials so far, none of their antimicrobial compounds have been able to compete with common antibiotics, and the search for antimicrobial plant agents continues. Also, given the importance of medicinal plants and their derived metabolites in ensuring the health of human communities and the high economic potential of these plants, as a reliable source of income, a comprehensive and comprehensive plan should be developed in developing countries and devote part of agricultural biotechnology research to universities and research institutes on the identification, industrial production, and optimization of methods of extracting pharmaceutical metabolites from these plants.

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