

Review Article

Cumin (*Cuminum cyminum*): Traditional Uses and Modern Scientific Aspects - A Review

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Article History

Received: 12.11.2024

Accepted: 17.12.2024

Published: 24.12.2024

Abstract: Cumin (*Cuminum cyminum*) is an herbaceous plant that belongs to the *Umbelliferae* family, widely known for its use as a spice in Indian, Middle Eastern, and other global cuisines. This aromatic spice contains powerful active compounds such as thymoquinone and cuminaldehyde, which have been linked to numerous health benefits. Recent scientific research has highlighted cumin's positive effects on digestion, inflammation reduction, blood sugar regulation, and even its potential anticancer properties. These attributes make cumin an important natural remedy for various health concerns. Furthermore, cumin possesses antibacterial and antifungal properties, making it effective in combating skin infections and other microbial ailments. Laboratory studies have revealed additional promising findings regarding cumin extract. These studies have demonstrated its ability to inhibit tumor growth, reduce intestinal inflammation, and enhance gut health in animal models. Such results indicate cumin's potential as a therapeutic agent for addressing chronic and complex health conditions. Despite these encouraging findings, it is essential to note that most studies so far have been conducted in laboratory settings or on animals. To fully understand cumin's medicinal potential and confirm its benefits for human health, further clinical trials on humans are necessary. Such trials will provide more comprehensive insights into the safety, efficacy, and dosage of cumin-based therapies. In addition to its culinary appeal, cumin stands out as a functional spice with significant health-promoting properties. Its multifaceted nature highlights the importance of integrating natural remedies into modern healthcare practices, though further research will solidify its role in clinical applications.

Keywords: Cumin, health practices, application, inflammation, medicinal potential.

INTRODUCTION

Cumin (*Cuminum cyminum*) is a herbaceous (rather than woody) plant of the "Umbelliferae" family. It has also become one of the most widely recognized spices in the world, especially for some Indian and Middle Eastern cuisines. Cumin is known for additional flavor and medicinal characteristics that have made it an important component of folk medicine and alternative therapies. This spice flourishes in hot and arid regions, especially in countries such as India, the Middle East and Africa. Cumin contains several important chemical compounds, such as thymoquinone and cuminaldehyde, among others which have several health benefits. Studies done recently has proven that cumin is beneficial for digestion, inflammation, diabetes and cancer treatment. Review of the scientific classification of cumin and related studies emphasized the true medicinal importance of cumin in this research [1].

The increasing interest in cumin stems from its rich phytochemical composition, which includes volatile oils, flavonoids, alkaloids, phenolic acids, and terpenes. These compounds contribute to its wide range of biological activities, including antimicrobial, antioxidant, anti-inflammatory, and antidiabetic properties. Cumin is a herbaceous plant from the Umbelliferae family with delicate branches and white or pink flowers. Cumin is a popular spice used in cooking and in traditional medicine for thousands of years [2]. Cumin is cultivated in several countries with hot and dry climate regions including India, Mexico, the Middle East, and Africa Cumin is not just a spice, but it consists of several active chemical compounds that show numerous medicinal properties.

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Citation: Sundus Hameed Ahmed (2024) Cumin (*Cuminum Cyminum*): Traditional Uses and Modern Scientific Aspects - A Review. *South Asian Res J Bio Appl Biosci*, 6(6), 262-264. 262

Research Objective is to assess cumin health advantages via current evidence scientific, also this review will cover digestion enhancer, Anti-microbial activity, Anti-inflammatory properties, blood glucose regulation. This review delves into the dual perspective of cumin as a traditional remedy and a scientifically validated functional ingredient.

Scientific name of cumin is: *Cuminum cyminum*

Family: Umbelliferae

Order: Apiales

Species: Cuminum

Geographical region India / Middle East / Africa

Medical Importance of Cumin

Improved Digestion

Cumin has active compounds like thymoquinone and cuminaldehyde that improve digestion. Regular consumption of cumin aids in the improvement of gastrointestinal symptoms (such as bloating and gas) in patients suffering from indigestion [3].

Cumin is not only a spice but a structure of some active chemical compounds that possess several medicinal qualities.

As per a study published in the journal *Dermatology and Therapy*, cumin poses antiseptic properties which can kill the bacteria responsible for skin infections and acne [4].

Enhancing Nervous System Health

According to researchers at the University of Medical Sciences, several of the active compounds in cumin may promote the overall health of the brain and all of its functions, which can help to alleviate anxiety symptoms. It is also demonstrated to improve the quality of sleep in patients with psychological disorders [5].

Findings in Laboratory Animals

Studies in laboratory animals have shown that cumin has a broad spectrum of therapeutic effects and is effective in treating many diseases. Some of what the studies, conducted on mice and other animals, found:

- ❖ **The better breeds, cumin and cancer:** In 2022 behind the wheels of mice discovered that cumin extract helps inhibit the growth of colon cancer cells. In the study, scientists injected cumin extract in mice and saw a reduction between 50% to 70% in multiple cancerous tumors. Therefore cumin has been ISTO be decrease the levels of oxidase and carcinogen that initiate of cancer [6]. Among them, one of the research studies on cumin and intestinal inflammation was done by a research group at the University of Tehran, which used cumin extract in vivo on animal models to test its role in intestinal inflammation. The results revealed that cumin sami has beneficial effect in lowering intestinal inflammation and enhancing gut health. In mice that exhibited symptoms of inflammatory bowel disease, including ulcerative colitis, cumin extract did wonders [7].
- ❖ **Reduces blood sugar levels:** A study conducted on mice with induced type 2 diabetes shows that cumin extract has the ability to reduce blood glucose levels. The mice treated with cumin extract also had much higher sugar level improvement than untreated mice (8). This means cumin may help reduce blood sugar levels.
- ❖ **Antibacterial and anti fungal properties of cumin:** An studying done on mice the antibacterial potential of cumin extract was studied. Mice that had received gum cumin broth showed increased resistance to both bacterial and fungal infections compared to those that had not received the treatment. Cumin was also shown to significantly [9, 10] inhibit the growth and other bacteria including *E. coli* and *Staphylococcus aureus*.
- ❖ **Cumin and antioxidation:** Cumin extract helps in smoke rotted lowering oxidase and ROS (reactive oxygen species) levels, in this way helping assigned oxidative harm in another study on mice. Mice administered cumin extract showed improved tissue health and decreased oxidative stress markers [11, 12].

Cumin (*Cuminum cyminum*), In addition to flavoring up our food, is a medicine used for plenty of health benefits and scientifically proven factors [13]. Some key active compounds in cumin are thymoquinone and cuminaldehyde, all links to its therapeutic properties such as better digestion, reduced inflammation, better control of blood sugar levels and antioxidant protection. Cumin has been shown to have significant antibacterial and antifungal activity, which makes this spice an interesting natural drug for the treatment of infections [14, 15].

The laboratory findings bolster cumin's potential for serious diseases, especially its anticancer effects. Some studies have highlighted that cumin extracts inhibit the proliferation of cancer cells and significantly reduce intestinal inflammation, especially in inflammatory bowel disease models, such as ulcerative colitis. Additionally, cumin played a role in blood glucose regulation and metabolic status [16, 17].

CONCLUSION

Cumin therefore can be an integral part of our daily diets or consumed as a natural remedy, offering a holistic solution to health problems, and complementing conventional treatments. Although highly promising, more research, especially human clinical trials, will be needed to give a complete picture of the extent of cumin's medicinal potential and to establish a standardized basis for its use with regard to medical treatment. It underlines the importance of the research behind traditional knowledge, especially in the case of natural spices and herbs, such as cumin, in the light of modern sciences and medicine.

ACKNOWLEDGMENT

Authors thanks and appreciate Mustansiriyah University's College of Science (<https://uomustansiriyah.edu.iq/e-newsite.php>) for their help to conduct and complete this work.

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