



# Exploring the Traditional and Medicinal uses of Indian traditional shrub *Ocimum Sanctum* (Tulsi)

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## Abstract

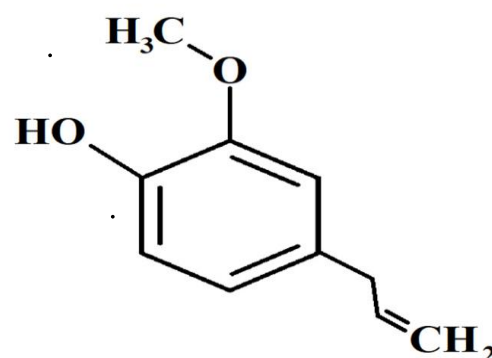
*Ocimum sanctum*, commonly known as Tulsi, holds a revered position in Indian traditional medicine and cultural practices. This abstract explores the extensive traditional and medicinal applications of Tulsi in the Indian context. It sheds light on the historical significance of Tulsi in Ayurveda, traditional remedies, and its religious and spiritual importance in Hindu culture. The phytochemistry of Tulsi, highlighting its diverse composition of essential oils, flavonoids, terpenoids, and alkaloids, which contribute to its therapeutic properties. Scientific evidence supporting its medicinal attributes, including anti-inflammatory, antioxidant, antimicrobial, and adaptogenic effects, is discussed. Furthermore, the role of Tulsi in managing various ailments such as respiratory disorders, digestive issues, and skin problems, as well as its potential contribution to overall well-being. The increasing interest in Tulsi within modern medicine is also addressed, as well as safety considerations and proper usage guidelines. The significance of conserving traditional knowledge and sustainable cultivation practices for Tulsi is emphasized. In conclusion, this underlines the importance of exploring and preserving the traditional and medicinal uses of Tulsi to unlock its full potential in promoting human health and well-being.

**Keywords:** *Ocimum sanctum*, Tulsi, traditional medicine, medicinal properties, Ayurveda, Indian culture, phytochemistry, modern medicine, sustainability.

## INTRODUCTION

*Ocimum Sanctum*, commonly known as Tulsi or Holy Basil, is an Indian traditional shrub that holds immense significance in the ancient systems of medicine and cultural practices of India. Revered for its diverse medicinal properties and spiritual associations, Tulsi has been an integral part of the Indian subcontinent's cultural heritage for thousands of years. This remarkable plant is deeply rooted in the fabric of traditional knowledge and has been extensively studied for its potential therapeutic applications (1). Tulsi is a sacred plant in Hinduism, often referred to as the "Queen of Herbs" or the "Incomparable One," and is widely grown in households and temples across India. It is considered auspicious and is believed to purify the surroundings, bestow blessings, and protect from negative energies. However, beyond its spiritual significance, Tulsi is an herbal treasure trove with various medicinal attributes that have captivated the attention of modern science (2,3).

The leaves, stems, and seeds of Tulsi possess a rich reservoir of bioactive compounds, such as essential oils, flavonoids, polyphenols, and alkaloids, which contribute to its pharmacological potential. These compounds exhibit anti-inflammatory, antioxidant, antimicrobial, immunomodulatory, and adaptogenic properties, making Tulsi a versatile and effective remedy for a wide range of health issues (4). In traditional Indian medicine systems like Ayurveda, Siddha, and Unani, Tulsi has been used to treat various ailments for centuries. It is renowned for its ability to alleviate respiratory conditions, including coughs, colds, and asthma. Additionally, Tulsi is known to enhance the body's natural defense mechanisms, making it valuable in preventing and managing infections. The adaptogenic nature of Tulsi helps the body cope with stress and promote overall well-being. It is believed to support mental health, improve memory, and aid in maintaining cognitive function. Apart from its medicinal benefits, Tulsi has culinary applications, adding a unique flavor to dishes and beverages, further solidifying its role in Indian gastronomy (4,5).



**Figure-1:** *Ocimum sanctum* plant (Tulsi)

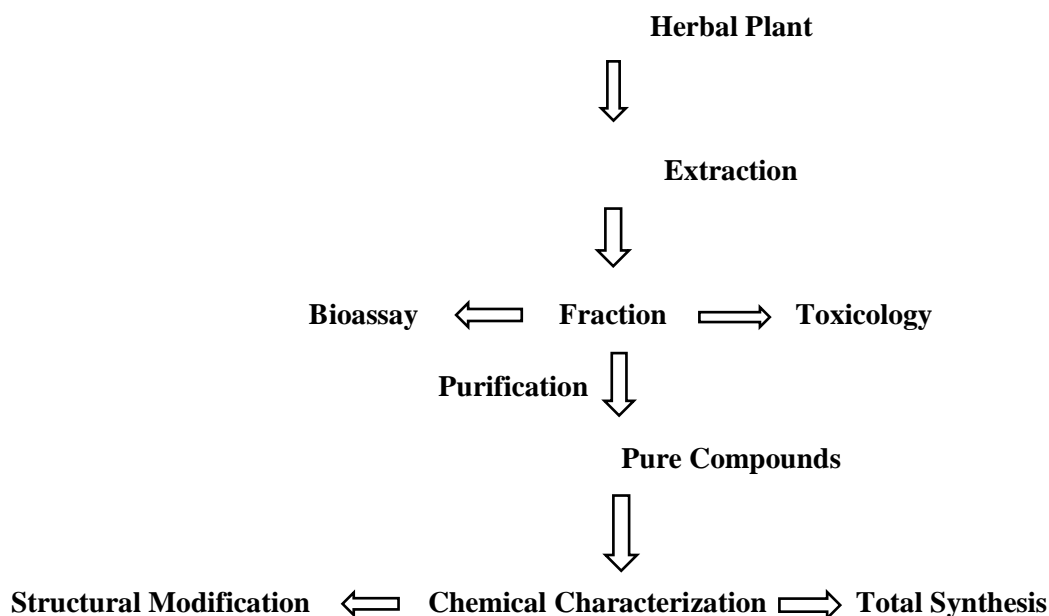
Eugenol (chemical structure)

In recent times, the traditional uses of Tulsi have piqued the interest of researchers worldwide. Numerous scientific studies have validated the healing properties attributed to this revered herb in Indian culture. As a result, Tulsi has garnered global attention and found its way into various health supplements, herbal teas, and cosmetics, catering to a growing demand for natural and holistic products. This exploration of the traditional and medicinal uses of Indian traditional shrub *Ocimum Sanctum* (Tulsi) aims to shed light on the profound cultural significance and scientific relevance of this plant. As we delve into the diverse applications of Tulsi, we will uncover a treasure trove of traditional wisdom and modern insights that celebrate the extraordinary contributions of this holy herb to the world of health and wellness (6).

## Ethnobotanical and Traditional Uses

*Ocimum Sanctum*, commonly known as Tulsi, plays a significant role in Indian ethnobotanical traditions and cultural practices. Revered as a sacred herb, it has been utilized for centuries in traditional medicine systems like Ayurveda (7). Tulsi is renowned for its diverse medicinal uses, including treating respiratory conditions, boosting immunity, and aiding digestion. It is considered an adaptogen, helping the body cope with stress and promoting overall well-being. Beyond its medicinal applications, Tulsi is used in culinary practices, adding a distinct flavor

to dishes and beverages. The deep-rooted ethnobotanical and traditional uses of Tulsi highlight its enduring importance in Indian heritage and holistic healing practices (8,9).



**Figure-2:** Method for obtaining active compounds from plants

## Phytochemistry Of Tulsi

The phytochemistry of Tulsi (*Ocimum Sanctum*) has garnered significant interest in the scientific community, making it a compelling topic for review articles. This traditional Indian shrub is rich in bioactive compounds such as essential oils, flavonoids, polyphenols, and alkaloids, each possessing unique pharmacological properties. These compounds contribute to Tulsi's diverse medicinal uses, including anti-inflammatory, antioxidant, antimicrobial, and immunomodulatory effects (10).

As an adaptogen, Tulsi also exhibits stress-reducing properties. Review articles on Tulsi's phytochemistry delve into its chemical composition, extraction methods, and pharmacological activities, validating its traditional therapeutic applications. Such comprehensive reviews play a crucial role in advancing our understanding of Tulsi's potential as a valuable source for natural and holistic medicine, promoting further research and utilization in healthcare and wellness sectors (10,11).

## Medicinal Properties and Health Benefits

Tulsi (*Ocimum Sanctum*) possesses a myriad of medicinal properties that have been extensively studied and validated. Its bioactive compounds, including essential oils, flavonoids, and polyphenols, contribute to potent anti-inflammatory, antioxidant, and antimicrobial effects. Additionally, Tulsi's adaptogenic nature aids in stress management and overall well-being. These medicinal attributes underscore its significance as a valuable natural remedy, with potential applications in modern healthcare practices. With growing scientific evidence supporting its traditional uses, Tulsi emerges as a promising herb with profound therapeutic potential for diverse health conditions.

- 1) Tulsi (*Ocimum Sanctum*) is rich in essential oils, flavonoids, and polyphenols, providing powerful antioxidant properties.
- 2) Its anti-inflammatory effects help reduce inflammation and alleviate related health conditions.
- 3) Tulsi boosts the immune system, enhancing the body's natural defense mechanisms.
- 4) It aids in respiratory health by soothing coughs, colds, and asthma symptoms.
- 5) The adaptogenic nature of Tulsi helps the body cope with stress and promotes mental well-being.
- 6) Regular consumption of Tulsi may improve digestion and alleviate gastrointestinal issues.
- 7) Its antimicrobial properties help combat infections and support overall wellness.
- 8) Tulsi can be beneficial in managing blood sugar levels for individuals with diabetes.
- 9) It may contribute to heart health by reducing cholesterol levels and supporting cardiovascular function.
- 10) The diverse health benefits of Tulsi make it a valuable addition to holistic health practices and traditional medicine systems.

### **Traditional Uses of Tulsi in Health and Wellness**

Tulsi is traditionally used for respiratory health, stress management, immune support, digestive aid, and spiritual well-being in India. There are some points which are given below (12):

- 1) Tulsi (*Ocimum Sanctum*) has been traditionally used in India for centuries as a herbal remedy to alleviate respiratory conditions such as coughs, colds, and asthma.
- 2) It is known to enhance the body's natural defense mechanisms and boost immunity, making it a valuable ally in maintaining overall health and wellness.
- 3) Tulsi is revered for its adaptogenic properties, which help the body cope with stress and promote mental well-being (13).
- 4) In traditional medicine systems like Ayurveda, Tulsi is used to improve digestion and alleviate gastrointestinal issues.
- 5) Its antimicrobial properties are traditionally harnessed to combat infections and promote healing.
- 6) Tulsi leaves and essential oils are commonly used in traditional remedies, teas, and decoctions for various health benefits (14).
- 7) It is believed to have anti-inflammatory effects, making it useful in managing inflammatory conditions.
- 8) Traditional practices incorporate Tulsi in skincare for its soothing and rejuvenating properties.
- 9) Tulsi-infused baths and steam inhalation are traditional practices to promote relaxation and respiratory health.
- 10) In the realm of wellness, Tulsi is incorporated into yoga and meditation practices to purify the surroundings and enhance spiritual experiences (15).

### **Role of Tulsi in Modern Medicine**

Tulsi's role in modern medicine has gained prominence due to its rich bioactive compounds and diverse medicinal properties. Extensive research validates its potential in addressing inflammation, oxidative stress, and microbial

infections (16,17). With adaptogenic effects for stress management and immune support, Tulsi offers promising opportunities for natural and holistic healthcare approaches.

- 1) Tulsi's bioactive compounds, including essential oils and flavonoids, have attracted interest in modern medicine.
- 2) Research validates its anti-inflammatory, antioxidant, and antimicrobial properties.
- 3) Tulsi shows potential in managing respiratory conditions like coughs and colds.
- 4) Its adaptogenic nature is studied for stress management and mental health support.
- 5) Tulsi's immune-boosting effects are explored for potential therapeutic applications.
- 6) Integrating Tulsi into modern medicine offers new possibilities for natural remedies and complementary treatments.
- 7) Further research is ongoing to unlock the full potential of Tulsi in modern healthcare (18,19).

### **Safety and Precautions Associated to use of Tulsi**

While Tulsi (*Ocimum Sanctum*) offers numerous health benefits, its use may have some side effects and interactions that require consideration. Mild side effects, such as gastrointestinal discomfort, headache, or skin irritation, have been reported in some individuals. Allergic reactions may occur, especially in those sensitive to plants in the Lamiaceae family (20).

Tulsi's blood-thinning properties may interact with anticoagulant medications, potentially increasing the risk of bleeding (21). It may also interact with drugs metabolized by the liver's CYP450 enzyme system, affecting their efficacy. Pregnant and breastfeeding women should exercise caution, as Tulsi may impact hormone levels (22).

Individuals with diabetes should monitor blood sugar levels closely, as Tulsi may lower blood glucose levels. Individuals with bleeding disorders should exercise caution, as Tulsi might interfere with blood clotting. Additionally, it is recommended to discontinue Tulsi use two weeks before any scheduled surgery. Before using Tulsi supplements or extracts, it is essential to consult a healthcare professional, especially if taking medications or managing pre-existing medical conditions, to ensure safe and appropriate use (23).

### **Future prospective of Tulsi in Medicine and other Industries**

The future prospects of Tulsi (*Ocimum Sanctum*) are promising in medicine and other industries. Ongoing research may uncover new therapeutic applications due to its diverse bioactive compounds (24). Tulsi's potential as a natural remedy for chronic diseases and inflammation could lead to targeted treatments. In other industries, Tulsi's incorporation into skincare, aromatherapy, and agriculture may offer eco-friendly alternatives (25). Advances in extraction technologies may enhance the potency and efficacy of Tulsi-based products, fostering its integration into diverse sectors. Some important points are given below (26,27):

- 1) Future research may uncover new therapeutic applications of Tulsi in modern medicine, thanks to its diverse bioactive compounds.
- 2) Tulsi's potential as a natural remedy for chronic diseases and inflammation could lead to the development of targeted treatments.

- 3) Advances in extraction technologies may improve the potency and efficacy of Tulsi-based pharmaceuticals.
- 4) The integration of Tulsi into personalized medicine and precision healthcare approaches may be explored.
- 5) Its role as a complementary therapy in cancer care and supportive care is a subject of interest.
- 6) The cosmetic and skincare industries may incorporate Tulsi for its soothing and rejuvenating properties.
- 7) Tulsi-infused beauty products and personal care items may see a surge in popularity.
- 8) The use of Tulsi in aromatherapy and essential oils may gain traction for relaxation and well-being.
- 9) Agriculture and horticulture industries may benefit from Tulsi as a natural pest repellent.
- 10) The potential of Tulsi-based nanomedicine for targeted drug delivery is an area of interest.

## CONCLUSION

In conclusion, the exploration of the traditional and medicinal uses of Indian traditional shrub *Ocimum Sanctum* (Tulsi) reveals a wealth of cultural significance and scientific relevance. Tulsi, deeply rooted in Indian heritage, has been revered for its spiritual and auspicious properties, while its role in traditional medicine systems like Ayurveda showcases its multifaceted healing potential. The rich phytochemistry of Tulsi, with essential oils, flavonoids, and polyphenols, validates its diverse medicinal properties, including anti-inflammatory, antioxidant, and antimicrobial effects. Its adaptogenic nature offers stress management and mental well-being benefits. As modern medicine continues to validate its therapeutic attributes, Tulsi's future prospects in healthcare and wellness industries appear promising. Integrating Tulsi into holistic health practices and diverse sectors presents an opportunity for a more natural and sustainable approach to well-being.

## References

1. Gordon MC, David JN. Natural product drug discovery in the next millennium. *Pharm Boil.* 2001;39:8–17.
2. Wink M. Introduction Biochemistry, role and biotechnology of secondary products. In: Wink M, editor. *Biochemistry of Secondary product Metabolism*. Florida: CRC press, Boca Raton; 2000. pp. 1–16.
3. Cor JS, Beach JF, Blair A, Clark AJ, King J, Lee TB, et al. Disodium chromoglycate. *Adv Drug Res.* 1970;5:190–6.
4. Sen P. Therapeutic potential of Tulsi: From experience to facts. *Drug News Views.* 1993;1:15–21.
5. Warriar PK. In: *Indian Medicinal Plants*. Longman O, editor. New Delhi: CBS publication; 1995. p. 168.
6. Kirtikar KR, Basu BD. *Indian Medicinal Plant 1975; 2nd Ed. Vol. 3*. Bishen Singh Mahendra Pal Singh, New Connaught Place, Dehradun, (Uttarakhand) (India). p. 1965–1968.
7. *Ocimum sanctum*. The Indian home remedy. In: *Current Medical Scene, March-April 1992* (Edited and published by S. Rajeshwari, Cipla Ltd., Bombay Central, Bombay).
8. Sanyal, PK. Homeopathic Pharmacy in India. In: *Cultivation and utilization of medicinal plants*. Editor: Atal CK and Kapoor BM (Published by PID CSIR) 1989.
9. Pandey BP, Anita. In: *Economic Botany* (Published by Chand and Company Ltd., Ramnagar, New Delhi), p. 294, 1990.

10. Sandip I. Vidhani, Vijay G. Vyas, Heena J. Parmar, Viren M. Bhalani, Mohammad M. Hassan, Ahmed Gaber, and Baljibhai A. Golakiya, "Evaluation of Some Chemical Composition, Minerals Fatty Acid Profiles, antioxidant and Antimicrobial Activities of Tulsi (*Ocimum sanctum*) from India." *American Journal of Food Science and Technology*, vol. 4, no. 2 (2016): 52-57. doi: 10.12691/ajfst-4-2-5
11. Joshi, Bishnu, et al. "Phytochemical extraction and antimicrobial properties of different medicinal plants: *Ocimum sanctum* (Tulsi), *Eugenia caryophyllata* (Clove), *Achyranthes bidentata* (Datiwan) and *Azadirachta indica* (Neem)." *Journal of Microbiology and Antimicrobials* 3.1 (2011): 1-7.
12. Kumar, V., Andola, H. C., Lohani, H., & Chauhan, N. (2011). Pharmacological review on *Ocimum sanctum* Linnaeus: a queen of herbs. *J of Pharm Res*, 4, 366-368.
13. Siva, M., Shanmugam, K. R., Shanmugam, B., Venkata, S. G., Ravi, S., Sathyavelu, R. K., & Mallikarjuna, K. (2016). *Ocimum sanctum*: a review on the pharmacological properties. *Int. J. Basic Clin. Pharmacol*, 5, 558-565.
14. Cohen, M. M. (2014). Tulsi-*Ocimum sanctum*: A herb for all reasons. *Journal of Ayurveda and integrative medicine*, 5(4), 251.
15. Mahajan, N., Rawal, S., Verma, M., Poddar, M., & Alok, S. (2013). A phytopharmacological overview on *Ocimum* species with special emphasis on *Ocimum sanctum*. *Biomedicine & Preventive Nutrition*, 3(2), 185-192.
16. Chandira, K. T. M. (2010). Traditional Indian Herbal Plants Tulsi and Its Medicinal Importance. *Phytochemistry*, 2(2), 103-108.
17. Thakur, S., Choudhary, S., Walia, B., & Chaudhary, G. (2021). Tulsi-a review based upon its ayurvedic and modern therapeutic uses. *Int J Inf Res Rev*, 8, 263-72.
18. Garodia, P., Ichikawa, H., Malani, N., Sethi, G., & Aggarwal, B. B. (2007). From ancient medicine to modern medicine: ayurvedic concepts of health and their role in inflammation and cancer. *J Soc Integr Oncol*, 5(1), 25-37.
19. Shree, P., Mishra, P., Selvaraj, C., Singh, S. K., Chaube, R., Garg, N., & Tripathi, Y. B. (2022). Targeting COVID-19 (SARS-CoV-2) main protease through active phytochemicals of ayurvedic medicinal plants—*Withania somnifera* (Ashwagandha), *Tinospora cordifolia* (Giloy) and *Ocimum sanctum* (Tulsi)—a molecular docking study. *Journal of Biomolecular Structure and Dynamics*, 40(1), 190-203.
20. Saini, G. Tulsi, the Holy Basil's Amazing and Fascinating Health Benefits.
21. Jamshidi, N., & Cohen, M. M. (2017). The clinical efficacy and safety of Tulsi in humans: a systematic review of the literature. *Evidence-Based Complementary and Alternative Medicine*, 2017.
22. Kumar, R., Saha, P., Lokare, P., Datta, K., Selvakumar, P., & Chourasia, A. (2022). A Systemic Review of *Ocimum sanctum* (Tulsi): Morphological Characteristics, Phytoconstituents and Therapeutic Applications. *International Journal for Research in Applied Sciences and Biotechnology*, 9(2), 221-226.
23. Satow, Y. E., Kumar, P. D., Burke, A., & Inciardi, J. F. (2008). Exploring the prevalence of Ayurveda use among Asian Indians. *The Journal of Alternative and Complementary Medicine*, 14(10), 1249-1253.

24. Giannenas, I., Sidiropoulou, E., Bonos, E., Christaki, E., & Florou-Paneri, P. (2020). The history of herbs, medicinal and aromatic plants, and their extracts: Past, current situation and future perspectives. In *Feed additives* (pp. 1-18). Academic Press.
25. Gunjan, M., Naing, T. W., Saini, R. S., Ahmad, A., Naidu, J. R., & Kumar, I. (2015). Marketing trends & future prospects of herbal medicine in the treatment of various disease. *World Journal of Pharmaceutical Research*, 4(9), 132-155.
26. Patil, C. S. Current Trends and Future Prospective oC Herbal Health Drinks.
27. Dhama, K., Karthik, K., Khandia, R., Munjal, A., Tiwari, R., Rana, R., ... & Joshi, S. K. (2018). Medicinal and therapeutic potential of herbs and plant metabolites/extracts countering viral pathogens-current knowledge and future prospects. *Current drug metabolism*, 19(3), 236-263.