



ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2023; 12(5): 1957-1960
© 2023 TPI

www.thepharmajournal.com

Received: 16-03-2023

Accepted: 19-04-2023

Riya Farha p

Department of Food Technology
and Nutrition, School of
Agriculture, Lovely Professional
University, Phagwara, Punjab,
India

A comprehensive review on consumption and health benefits of herbs: Allspice, ginger and tulasi

Riya Farha p

Abstract

Herbs have been used for thousands of years to treat a wide range of illnesses and enhance general health. Three herbs, allspice, ginger, and tulsi, have a wide range of therapeutic uses. Pimento dioica, popularly known as allspice, has been utilised for thousands of years for its digestive, anti-inflammatory, and analgesic effects. It can be used to treat ailments including arthritis and muscle aches since it contains eugenol, a natural pain reliever. Additionally, it contains a lot of antioxidants, which lower inflammation and guard against chronic illnesses. On the other hand, ginger is widely known for its anti-nausea effects, making it a popular treatment for chemotherapy-related nausea as well as motion sickness and morning sickness. Contains anti-inflammatory qualities as well, which can aid in reducing pain and swelling in diseases including rheumatoid arthritis and osteoarthritis. Additionally, it has been demonstrated to enhance immunity, stimulate digestion, and lower cholesterol. In Ayurveda medicine, tulsi, also known as holy basil, is revered and is utilised for several different medical ailments. It offers some degree of defence against oxidative stress and inflammation thanks to its antioxidant and anti-inflammatory effects. Asthma, bronchitis, and colds are just a few of the respiratory and digestive conditions that are traditionally treated with tulsi. Other conditions include bloating, gas, and indigestion. Additionally, it is acknowledged to have the ability to lessen tension and can enhance concentration and focus.

Keywords: Herbs, allspice, tulsi, ginger, antimicrobial, safety and dosage

Introduction

Since ancient times, herbs have been utilised for medical purposes, and this practice is still common today. The World Health Organisation estimates that 75% of the global population uses herbs for basic health requirements. The use of medicinal herbs and herbal medicine is a centuries-old tradition that has been adopted with various therapeutic strategies depending on climate, phytogeography, and climatic conditions. Social, botanical, and animal traits [20]. The continuous usage of these medicinal herbs demonstrates the positive therapeutic properties of these plants, which have been used by virtually all cultures to prevent and treat disease [9]. However, certain herbs are dangerous and should be avoided, and little research has been done to examine any potential negative effects that may be linked to using medicinal herbs for a long time or at large doses [16]. Modern chemistry has advanced to the point where it is now possible to separate compounds from medicinal herbs that can be utilised as drugs or as building blocks for the manufacture of many significant modern medications. The study's main focus is on medicinal plants and how they might be used, including *Ocimum tenuiflorum* (Tulsi), *Zingiber officinale* (Ginger), and *Pimenta dioica* (Allspice).

Production of herbs in India

India is the world's top producer of herbs and medicinal plants, with Gujarat, Rajasthan, Haryana, Tamil Nadu, Andhra Pradesh, and Uttarakhand being the top states for producing plants with a high medical value. In India, there are about 8,000 different types of medicinal herbs, of which 880 are used in trade [1]. There are around 42 species imported and 48 species exported from this group. According to the Department of Environment and Forests of the Indian Government, tropical forests located along the Western and Eastern Ghats are home to about 70% of these species. India produces the most ginger in the world, making up roughly 30% of total production. In India, Kerala, Karnataka, Assam, Meghalaya, and Tulsi (Holy Basil) are the top producers of ginger. Tulsi is abundantly grown all over India, where it is native. It is frequently cultivated in homes and temples in Hinduism since it is regarded as a sacred plant [34]. Both the allspice plant and its cultivation are uncommon in India.

Corresponding Author:

Riya Farha p

Department of Food Technology
and Nutrition, School of
Agriculture, Lovely Professional
University, Phagwara, Punjab,
India

It is utilised in several Indian meals, particularly those that draw on British and Caribbean flavours. Overall, allspice is not as frequently used in Indian cooking as ginger and tulsi, which are both widely used and farmed there ^[11].

***Pimento dioica* (Allspice)**

The plant *Pimento dioica*, popularly known as allspice, is a member of the Myrtaceae family and is well-known for the spices that are made from its berries. The herb has been utilised for both medicinal and culinary purposes ^[13]. In India, pimento leaves are used to spice rice, and dried berries are employed in meat marinades. The plant's characteristic perfume is a combination of scents from spices including cinnamon, nutmeg, and clove ^[24]. Numerous substances, including phenylpropanoids, tannins, glycosides, and essential oils, have been identified from the plant. Pimento leaves' aqueous-alcoholic extract underwent phytochemical screening, and the results showed the presence of alkaloids, saponins, tannins, flavonoids, proteins, and triterpenoids ^[5]. In allspice, there are 9% of water, 72% of carbs, 6% of fat, and 2% of protein. They also contain high levels of vitamins and minerals, including calcium, iron, and vitamin C ^[7]. It is a medicinal plant with several benefits. Both as a flavour agent and for its therapeutic properties, the plant has a long history. A high amount of antioxidant activity, comparable to that of pure eugenol ^[23], was present in the essential oil produced by hydro-distilling samples of Pimento berry. The main chemical in *pimento* essential oil, eugenol, has been shown to exhibit selective anticancer and anti-proliferative activities in addition to being a highly effective antioxidant and antibacterial molecule ^[28]. The herb has also been reported to be beneficial for treating severe neurologic pain conditions, as well as colds, dysmenorrhea, dyspepsia, joint discomfort, myalgia, diabetes, lung congestion, and various odontalgia.

***Zingier officinal* (Ginger)**

Since ancient times, ginger (*Zingier officinal*), a popular spice, has been utilised for medical purposes. It is a swollen, aromatic, spicy rhizome that is high in volatile oil, protein, and starch. It has a protein content between 2 and 3%, a fat content between 0 and 9%, a fibre content between 2 and 4%, and a carbohydrate content between 12 and 3% ^[31]. It includes a variety of chemical elements, such as terpenes, polysaccharides, lipids, organic acids, and raw fibres ^[15]. It is simple to include in a daily diet in several ways. Fresh or dried ginger can be added to tea, smoothies, or juices. Additionally, ginger can be used as a spice in cooking, giving food like stir-fries, soups, and curries flavour. It can also be pickled and served as a condiment or added to salads. The phenolic chemicals found in ginger, like gingerols and shogaols, are primarily responsible for their beneficial effects on health. Numerous biological effects, such as antioxidant, anti-inflammatory, antimicrobial, anticancer, neuroprotective, cardiovascular protective, respiratory protective, anti-obesity, anti-diabetic, anti-nausea, and antiemetic activity have all been discovered in it ^[14]. Additionally, it has been shown that its extracts contain antibacterial qualities and may be utilised to treat bacterial infections ^[26]. Due to its low-calorie and functional beverage qualities, as well as its ability to improve general wellbeing ^[18], ginger beer, which is produced from natural ginger extract, has grown in popularity. Numerous disorders, including obesity, diabetes, non-alcoholic fatty liver disease, Alzheimer's disease, rheumatoid arthritis,

asthma, and chronic kidney disease can be managed and prevented with its help. Additionally, strong anti-inflammatory, anti-emetic, and chemo-protective properties of ginger have been discovered ^[27].

***Ocimum tenuiflorum* (Tulsi)**

Tulsi, also known as *Ocimum sanctum* or *Ocimum tenuiflorum*, is a member of the Lamiaceae family and is a 30–60 cm tall, heavily branching subshrub with simple, opposite green or purple leaves. The plant is grown for economic, therapeutic, and religious uses and is indigenous to Asia. Tulsi leaves are a good source of minerals such as calcium, magnesium, phosphorus, iron, and potassium as well as vitamins A, C, and K. It also has a healthy quantity of fibre and protein ^[21]. Its medicinal and spiritual characteristics are highly regarded in Ayurveda treatment. It has several chemical components that could be used in medicine. The primary chemical components of Tulsi include oleanolic acid, ursolic acid, rosmarinic acid, Eugene, caracole, linalool, and β -caryophyllene. Additionally, its essential oil contains bioactive substances including camphor, eucalyptol, alpha bisabolene, beta bisabolene, and germacrene ^[3]. Numerous sesquiterpenes and monoterpenes, including beryl acetate, β and α -pinenes, camp sterol, and camphene, can be found in Tulsi's leaves and stems. It has been asserted to possess a variety of beneficial qualities, including expectorants, analgesics, anti-emetics, and anti-inflammatory agents ^[30]. Since many years ago, chemical components have been widely employed in food, cosmetics, and dental, and oral care products. Plant extracts are still being researched for more potent medications. It is regarded as an adaptive and is proven to shield tissues and organs from chemical and physical stress ^[4]. It is advised for a variety of ailments including anxiety, cough, asthma, diarrhoea, fever, arthritis, and skin diseases ^[12] because of its anti-bacterial, anti-viral, and anti-fungal properties. It also has a lot of Rasayana qualities, which can be used to treat the body's common tendency to change the mood and promote mental clarity and calmness ^[22].

Safety and Dosage of Allspice, Ginger and Tulsi

According to WebMD, doses might be crucial and natural products aren't always safe. There isn't enough scientific data to establish an adequate dose range for these herbs because the dosage of allspice, ginger, and tulasi depends on several variables, including the user's age, health, and several other ailments. To prevent potential side effects and drug interactions, it is crucial to read the instructions on product labels carefully and get expert medical advice before using these herbs.

Allspice is generally regarded as safe (GRAS) when used in food, however, it is best to avoid consuming more than what is present in food because safety and doses have not been thoroughly studied. However, some people may experience allergic reactions, skin irritation, and respiratory distress when using it as a supplement at large doses ^[19]. People using blood-thinning drugs should avoid it since it may interfere with blood clotting. Traditional applications of allspice have reported using 5 to 10 mL per 240 mL of water taken three times a day, while allspice essential oil has been used at levels of 0.05 to 0.2 mL. Mucous membranes can be irritated by allspice and plant extracts ^[10].

When used properly, ginger is generally regarded as safe, however, it might have minor side effects like heartburn,

diarrhoea, and stomach discomfort. People with bleeding disorders should not use it since it may interfere with certain drugs, such as blood thinners [6]. Depending on the intended application, different dosages of ginger supplements are advised. Dosages of 1-2 grams of dried ginger root or 1-2 ml of ginger extract are frequently utilised for general wellness purposes. Ginger doses of 0.5-1 grams or 1-2 ml taken up to four times per day are beneficial for treating nausea and vomiting [33].

Tulasi has been utilised historically in a variety of ways, and when used properly, it is usually regarded as safe. It may, however, result in minor side effects like nausea, heartburn, and diarrhoea, and may also lower blood sugar levels and should be taken with caution in diabetics using blood sugar-lowering medications [17]. Depending on the intended use, different Tulasi supplement dosages are advised. Tulsi extract taken twice daily in amounts of 300–600 mg is good for general health purposes [8]. Tulsi extract doses of 500–1,000 mg administered twice daily have been utilised for respiratory issues like asthma and bronchitis. Tulsi extract in doses of 500–1,000 mg administered twice daily is beneficial for stress and anxiety [25].

Conclusion

Herbal remedies and uses have been extensively investigated and recognised throughout history, and they have been used medicinally for millennia by many different civilizations. Allspice, ginger, and tulasi are three of these herbs that have demonstrated potential outcomes in fostering health and wellness. A small, dark-brown berry known as allspice has historically been used in cooking and as a home treatment for several illnesses. Allspice's main ingredient, eugenol, has been demonstrated in studies to have a variety of positive health effects. Ginger is a well-liked herb that can be used fresh, dried, or powdered. It has long been used to alleviate digestive problems, motion sickness, and nausea. Prostaglandin and cytokine production are inhibited by its active ingredients, gingers and shogaols. Three of its active ingredients are eugenol, rosmarinic acid, and ursolic acid. Additionally, it has been discovered to have immunomodulatory properties that increase the activity of T cells and natural killer cells, two cells that are crucial to the immune system.

The safety and effectiveness of these herbs may differ depending on the person and their unique health state, even though they can promote health and wellness. For instance, allspice should be avoided by anyone taking blood-thinning drugs since it may interfere with blood coagulation. When used by people with bleeding issues, ginger should be used with caution since it may interfere with blood-thinning drugs. Tulasi may reduce blood sugar levels, thus people with diabetes who are also taking drugs to do so should use caution when taking it. Before beginning any supplement regimen, it's also crucial to follow suggested dosages and speak with a healthcare provider.

References

- Begum KH, Bhattacharyya A, Deka RL. Effect of soil physicochemical properties on rhizome rot disease of ginger under Assam condition. *Int. J. Cur. Microbial. App. Sci.* 2018;7(6):2097-2102.
- Benzie IFF, Wachtel-Galor S. Herbal medicine: bimolecular and clinical aspects; c2011.
- Bhamra SK, Heinrich M, Johnson MRD, Howard C, Slater A. The Cultural and Commercial Value of Tulsi (*Ocimum tenuiflorum* L.): Multidisciplinary Approaches Focusing on Species Authentication. *Plants.* 2022;11(22):3160.
- Cohen MM. Tulsi-*Ocimum sanctum*: An herb for all reasons. *Journal of Ayurveda and Integrative Medicine.* 2014;5(4):251.
- Dima C, Cotârlet M, Alexe P, Dima S. Microencapsulation of essential oil of pimento [*Pimenta dioica* (L) Merr.] by chitosan/k-carrageenan complex coacervation method. *Innovative Food Science and Emerging Technologies.* 2014;22:203-211. <https://doi.org/10.1016/j.ifset.2013.12.020>
- Ding M, Leach M, Bradley H. The effectiveness and safety of ginger for pregnancy-induced nausea and vomiting: a systematic review. *Women and Birth.* 2013;26(1):e26-e30.
- Donado-Pestana CM, Moura MHC, de Araujo RL, de Lima Santiago G, de Moraes Barros HR, Genovese MI. Polyphenols from Brazilian native Myrtaceae fruits and their potential health benefits against obesity and its associated complications. *Current Opinion in Food Science.* 2018;19:42-49. <https://doi.org/10.1016/j.cofs.2018.01.001>
- Dubey S, Shah S. Effect of *Ocimum sanctum* (Tulsi) on Histology of Liver and Kidney of Albino Rat. *Plant Arch.* 2018;18:1416-1420.
- Eddouks M, Chattopadhyay D, De Feo V, Cho WC. Medicinal plants in the prevention and treatment of chronic diseases 2013. In *Evidence-Based Complementary and Alternative Medicine (Vol. 2014)*. Hindawi; c2014.
- Eden C, Smoothies J, Bar WS, Bar H (n.d.). Allspice (*Pimenta dioica*).
- Jarquín-Enríquez L, Ibarra-Torres P, Jiménez-Islas H, Flores-Martínez NL. *Pimenta dioica*: a review of its composition, phytochemistry, and applications in food technology. *International Food Research Journal.* 2021;28(5):893-904. <https://doi.org/10.47836/ifrj.28.5.02>
- Kaur S, Sabharwal S, Anand N, Singh S, Singh Baghel D, Mittal A. An overview of Tulsi (Holy basil). *European Journal of Molecular & Clinical Medicine.* 2020;7(7):2833-2839.
- Leonardo RF, Pedro HP, Leandra de ARO, Josana de CP, Pedro HF, Joelma AM de P. Structural organization and phytochemical analysis of *Pimenta dioica* (L.) Merrill (Myrtaceae) leaves collected from Gois State, Brazil. *Journal of Medicinal Plants Research.* 2014;8(38):1134-1147. <https://doi.org/10.5897/jmpr2014.5395>
- Malu SP, Obochi GO, Tawo EN, Nyong BE. Antibacterial activity and medicinal properties of ginger (*Zingiber officinale*). *Global Journal of Pure and Applied Sciences.* 2009;15:3-4.
- Mao QQ, Xu X-Y, Cao S-Y, Gan R-Y, Corke H, Beta T. Bioactive compounds and bioactivities of ginger (*Zingiber officinale* Roscoe). *Foods.* 2019;8(6):185.
- Mei N, Guo X, Ren Z, Kobayashi D, Wada K, Guo L. Review of Ginkgo biloba-induced toxicity, from experimental studies to human case reports. *Journal of Environmental Science and Health, Part C.* 2017;35(1):1-28.
- Mohan L, Amberkar MV, Kumari M, others. *Ocimum*

- sanctum* Linn. (TULSI): An overview. *Int J Pharm Sci Rev Res.* 2011;7(1):51-53.
18. Nutakor C, Essiedu JA, Adadi P. Bia Gùng; c2020. 10.2020.Pdf.
 19. Padilla-Camberos E, Sanchez-Hernandez IM, Torres-Gonzalez OR, del Rosario Gallegos-Ortiz M, Méndez-Mona AL, Baez-Moratilla P. Natural essential oil mix of sweet orange peel, cumin, and allspice elicits anti-inflammatory activity and pharmacological safety similar to non-steroidal anti-inflammatory drugs. *Saudi Journal of Biological Sciences.* 2022;29(5):3830-3837.
 20. Pan SY, Litscher G, Gao SH, Zhou SF, Yu ZL, Chen HQ, *et al.* Historical perspective of traditional indigenous medical practices: the current renaissance and conservation of herbal resources. *Evidence-Based Complementary and Alternative Medicine;* c2014.
 21. Panchal P, Parvez N. Phytochemical analysis of medicinal herb (*Ocimum sanctum*). *International Journal of Nanomaterial's, Nanotechnology and Nano medicine.* 2019;5(2):8-11.
 22. Pattanayak P, Behera P, Das D, Panda SK. *Ocimum sanctum* Linn. A reservoir plant for therapeutic applications: An overview. *Pharmacognosy Reviews.* 2010;4(7):95.
 23. Pavithra B. Eugenol - A review. *Journal of Pharmaceutical Sciences and Research.* 2014;6(3):153-154.
 24. Premachandran MS, Murthy PS. Ethnobotanical, phytochemical, pharmacological properties and applications of *Pimenta dioica* L. *Journal of Essential Oil Research.* 2022;34(3):216-232.
 25. Roe AL, Venkataraman A. The Safety and Efficacy of Botanicals with No tropic Effects. *Current Neuropharmacology.* 2021;19(9):1442.
 26. Shahrajabian MH, Sun W, Cheng Q. Clinical aspects and health benefits of ginger (*Zingier officinal*) in both traditional Chinese medicine and modern industry. *Acta Agriculturae Scandinavica, Section b—Soil \& Plant Science.* 2019;69(6):546-556.
 27. Singh J, Kumar M, Sharma A, Pandey G, Chae K, Lee S. We are Intech Open, the world's leading publisher of Open Access books Built by scientists, for scientists TOP 1%. *Intech,* 11(tourism); c2016;13. <https://www.intechopen.com/books/advanced-biometric-technologies/liveness-detection-in-biometrics>
 28. Stewart TA, Lowe HIC, Watson CT. (Allspice) essential oil extracted via hydro distillation, solvent and supercritical fluid extraction methodologies. *American Journal of Essential Oils and Natural Products.* 2016;4(3):27-30.
 29. Unuofin JO, Lebelo SL. Antioxidant effects and mechanisms of medicinal plants and their bioactive compounds for the prevention and treatment of type 2 diabetes: An updated review. *Oxidative Medicine and Cellular Longevity;* c2020.
 30. Upadhyay RK. Tulsi: A holy plant with high medicinal and therapeutic value. *International Journal of Green Pharmacy (IJGP);* c2017;11(01).
 31. Van Duong T, Van Mai D, Van Hung M, others. Genetic Relationships of Some Samples of Ginger (*Zingiber officinale* (Wild) Roscoe) as Medicinal Herbs in the Cuu Long River Delta, Vietnam. *Pakistan Journal of Biological Sciences: PJBS.* 2022;25(6):495-500.
 32. Vandebroek I, Picking D, Vandebroek I, Picking D. *Pimenta dioica* (L.) Merr.(Myrtaceae). *Popular Medicinal Plants in Portland and Kingston, Jamaica;* c2020.p. 181-186.
 33. Viljoen E, Visser J, Koen N, Musekiwa A. A systematic review and meta-analysis of the effect and safety of ginger in the treatment of pregnancy-associated nausea and vomiting. *Nutrition Journal.* 2014;13:1-14.
 34. Vinay SMFAK, Divya GD (n.d.). BASIL (Tulsi) production is an income generating activity for poor and marginal farmers in India.