J. Biodivers. Conservation 9(4): 61-67 ISSN: 2457-0761 (online)
2025 http://www.aprfjournal.in

Explorer Article

Nutraceutical for winter in India

Harsha Ashish Thanvi[1], Saraswati Majhi[2], Sweta Mishra[3], Shivakumar P[4] and Neeraj[5*]

[1]Department of Dravyaguna Vigyana, Siddhakala Ayurved Mahavidyalaya, Sangamner, Maharashtra, India

[2]P. G. Department of Botany, Shailabala Women's Autonomous College, Cuttack, affiliated to Rama Devi Women's University, Bhubaneswar, Odisha, India

[3]Ambika Prasad Research Foundation, Odisha, India

[4]Department of Zoology, Government Science College (Autonomous), Hassan, Hassan University, Karnataka, India

[5]Department of Botany, Government P. G. College, Sector-1, Panchkula, Haryana, India

*Email-Id: neerajsanjiv74@gmail.com, ORCID: https://orcid.org/0009-0004-8757-4361

DOI: https://doi.org/10.5281/zenodo.17569750

Article Details: Received: 2025-09-10 | Accepted: 2025-11-10 | Available online: 2025-11-10

Abstract: Winter in India poses several health challenges, including increased susceptibility to respiratory infections, weakened immunity, and reduced metabolic activity, leading to a growing interest in nutraceuticals derived from traditional medicinal plants. This review highlights ten commonly used winter nutraceuticals *Allium cepa*, *Allium sativum*, *Cinnamomum verum*, *Curcuma longa*, *Phyllanthus emblica*, *Glycyrrhiza glabra*, *Moringa oleifera*, *Ocimum sanctum*, *Piper nigrum*, and *Zingiber officinale* that play a vital role in strengthening immunity, improving respiratory health, and maintaining overall well-being during the cold season. These plants are rich in bioactive compounds such as flavonoids, polyphenols, alkaloids, and essential oils, which exhibit antioxidant, antimicrobial, and anti-inflammatory properties. The integration of these nutraceuticals into the winter diet not only aligns with India's traditional Ayurvedic wisdom but also offers a natural and preventive approach to maintaining health and combating seasonal ailments.

Keywords: Antioxidants, immunity boosters, India, medicinal plants, nutraceuticals, traditional medicine, winter health

Introduction

Winter in India brings a distinct set of health challenges influenced by cold temperatures, seasonal infections, and dietary changes (Narain, 2012). During this period, the body's immune system often weakens, making individuals more susceptible to respiratory ailments such as cough, cold, sore throat, and bronchitis. Traditionally, Indian households have relied on natural remedies derived from commonly

available plants and spices to combat these seasonal illnesses (Gidwani et al., 2022). These plants, rich in vitamins, minerals, and bioactive phytochemicals, function as nutraceuticals, natural products that bridge the gap between nutrition and medicine (Puri et al., 2022). Unlike synthetic supplements, nutraceuticals derived from local flora offer a holistic approach to health by not only addressing disease symptoms but also enhancing physiological resilience and immunity during cold weather (Di Sotto et al., 2020). The importance of studying winter nutraceuticals lies in their proven therapeutic potential and cultural relevance within traditional Indian systems of medicine, particularly Ayurveda (Pandey et al., 2013). Plants such as *Allium sativum* (garlic), *Zingiber officinale* (ginger), *Phyllanthus emblica* (amla), and *Ocimum sanctum* (tulsi) are deeply embedded in India's ethnomedicinal practices (Wazib et al., 2025). These species are known to contain compounds like flavonoids, alkaloids, terpenes, and polyphenols that exhibit antioxidant, antimicrobial, and immunomodulatory activities (Tudu et al., 2022). Their routine use during winter supports the body's defense mechanisms, improves metabolism, and enhances vitality (Medoro et al., 2023). As modern lifestyles shift toward processed foods and chemical-based supplements, the rediscovery and scientific validation of such local nutraceutical plants are becoming increasingly relevant for preventive healthcare and sustainable well-being (Siddiqui and Moghadasian, 2020). Present work aims to create awareness about locally available nutraceutical plants that play a crucial role in maintaining health during winter in India. Documenting their traditional uses, parts utilized, and scientifically recognized benefits helps promote the conservation of ethnobotanical knowledge and encourages communities to incorporate these plants into their dietary and healthcare practices. Furthermore, understanding the nutraceutical potential of native species fosters community-level health awareness, supports local biodiversity utilization, and bridges the gap between traditional wisdom and modern nutritional science. Such awareness can empower individuals to adopt safer, accessible, and eco-friendly health practices rooted in India's rich plant heritage.

Methodology

The present study was conducted through an integrative approach combining literature review, field observation, and ethnobotanical inquiry to document nutraceutical plants traditionally used during winter in India (Jena et al., 2025a; Kumar, 2025). A comprehensive literature survey was carried out from 2023-2024 (Kumar, 2025). Complementing this, field surveys were undertaken in selected urban kitchen gardens and home backyards, where commonly cultivated medicinal and spice plants were observed, identified, and recorded for their local uses (Jena et al., 2025b). Informal interviews and interactive discussions were held with elderly family members and traditional knowledge holders, especially grandmothers, to gather insights on traditional recipes, home remedies, and seasonal usage patterns of these plants in winter diets (Jena et al., 2025b).

Results and discussion

The study documented a total of ten major plant species commonly utilized as nutraceuticals during the winter season in India, representing diverse botanical families such as *Amaryllidaceae*, *Zingiberaceae*, *Lauraceae*, *Phyllanthaceae*, *Fabaceae*, *Moringaceae, Piperaceae* and *Lamiaceae*. Field observations in urban kitchen gardens revealed that enumerated species were widely cultivated and frequently

incorporated into daily diets in various forms such as herbal teas, decoctions, or spice blends. Insights from traditional knowledge holders, particularly elderly women, emphasized the preventive use of these plants for common winter ailments including cold, cough, sore throat, and respiratory discomfort. Literature analysis supported these ethnobotanical findings, highlighting the presence of bioactive compounds like curcumin, allicin, piperine, and eugenol that contribute to immune enhancement, anti-inflammatory action, and improved respiratory function (Figure 1; Sengupta et al., 2021). The integration of field-based observations with traditional knowledge and scientific validation underscores the enduring significance of local plants as natural, accessible, and effective nutraceuticals for winter health management.

Table 1: Nutraceuticals of Winter in India

Botanical Name	Common Name	Parts used	Health benefits
Allium cepa L. (Amaryllidaceae; Figure 2a)	Onion	Bulb	Traditionally, onion juice has been used to help with coughs, colds, sore throats, and other respiratory ailments in winter.
Allium sativum L. (Amaryllidaceae; Figure 2b)	Garlic	Bulb	Garlic's compounds are known for their antimicrobial and antiviral properties, which can help with common winter illnesses like colds and respiratory tract infections.
Cinnamomum verum J.Presl (Lauraceae; Figure 2c)	Cinnamon	Bark	Cinnamon's potential health benefits are particularly welcome in winter. It contains antioxidants and may help regulate blood sugar and cholesterol levels.
Curcuma longa L. (Zingiberaceae; Figure 2d)	Turmeric	Rhizome	Turmeric, particularly its active compound curcumin, is known to boost immunity, which is beneficial during winter.
Phyllanthus emblica L. (Phyllanthaceae)	Indian gooseberry	Fruits	The high vitamin C content in amla fruits helps boost the immune system, which is especially beneficial during winter when colds and other infections are more common.
Glycyrrhiza glabra L. (Fabaceae)	Sweetwood	Roots	Licorice root acts as a demulcent, which is soothing to mucous membranes, and as an

			expectorant, helping to loosen and expel phlegm.
Moringa oleifera Lam. (Moringaceae)	Drumstick tree	Leaves	The high levels of vitamins and minerals in the leaves help to strengthen the immune system, which is especially important during winter when colds and flu are common.
Ocimum sanctum L. (Lamiaceae; Figure 2e)	Holy basil	Leaves	A tea or decoction made from fresh or dried leaves can be used to treat coughs, bronchitis, and other respiratory illnesses that spread in winter.
Piper nigrum L. (Piperaceae)	Black pepper	Dried fruit	A common remedy is mixing a teaspoon of honey with crushed black pepper to soothe cold and cough symptoms.
Zingiber officinale Roscoe (Zingiberaceae, Figure 2f)	Ginger	Rhizome	In traditional medicine, ginger is believed to have a warming nature that helps stimulate circulation and dispel "cold pathogens"

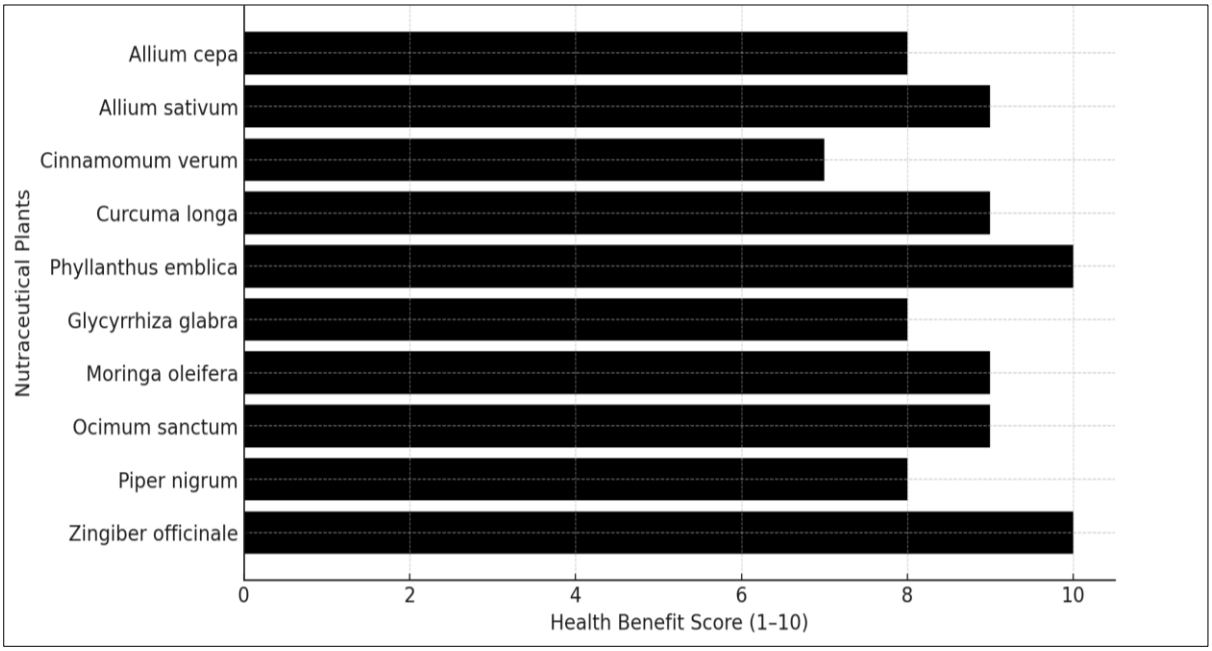

Figure 1: Comparative health benefit scores of selected nutraceutical plants traditionally used in India during the winter season

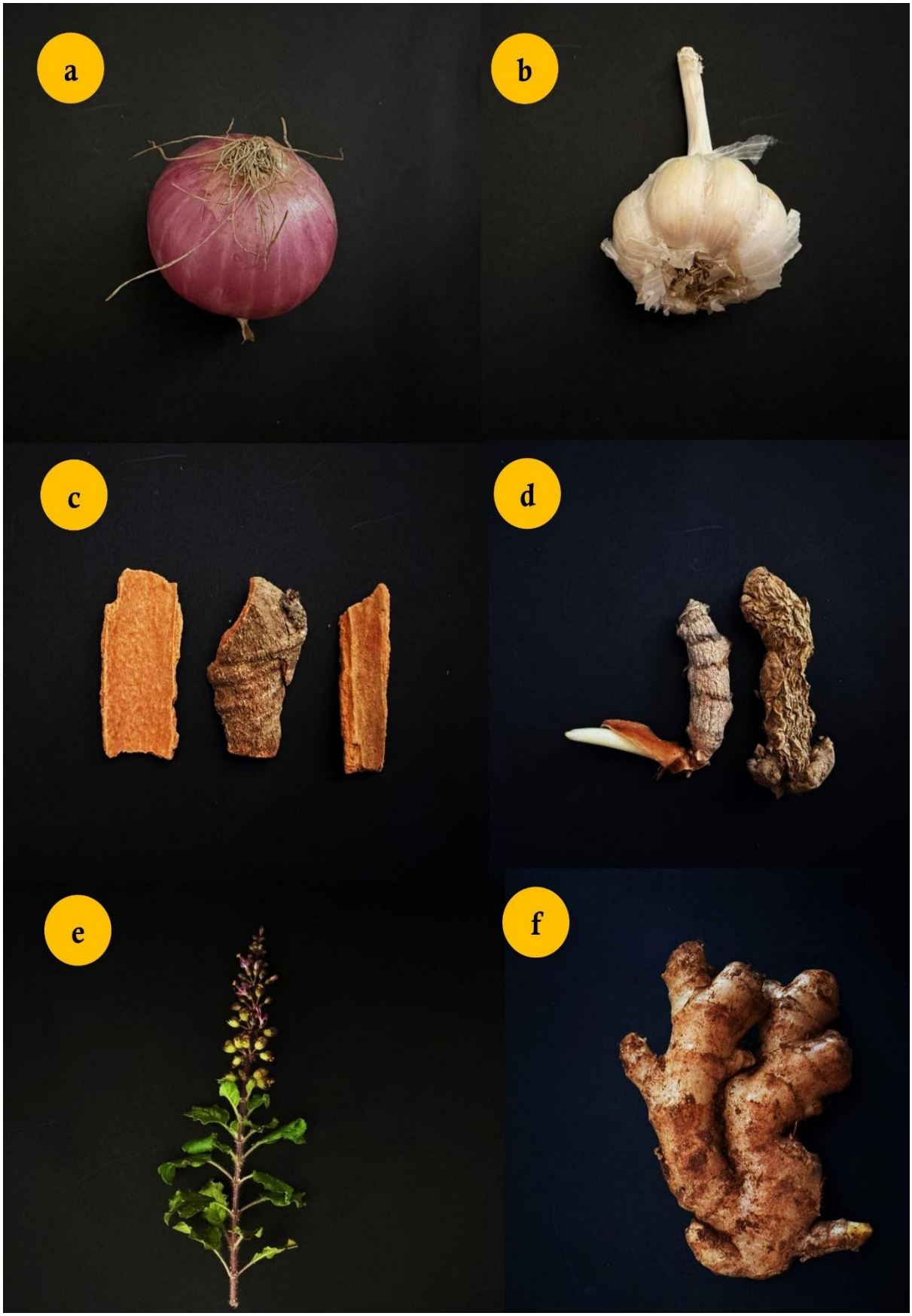

Figure 2**:** Some winter nutraceuticals; a) *Allium cepa*, b) *Allium sativum*, c) *Cinnamomum verum*, d) *Curcuma longa*, e) *Ocimum sanctum* and f) *Zingiber officinale*

Figure 1 also illustrated the comparative health benefit scores of ten nutraceutical plants commonly used during the winter season in India, highlighting their relative importance in promoting immunity and managing seasonal ailments. Among the studied species, *Phyllanthus emblica* (Indian gooseberry) and *Zingiber officinale* (ginger) exhibited the highest scores, reflecting their exceptional antioxidant and immune-boosting potential. *Allium sativum* (garlic), *Curcuma longa* (turmeric), *Moringa oleifera* (drumstick tree), and *Ocimum sanctum* (holy basil) also ranked high, emphasizing their widespread traditional use for respiratory and inflammatory conditions. Plants such as *Cinnamomum verum*, *Piper nigrum*, and *Glycyrrhiza glabra* demonstrated moderate but significant health benefits, primarily due to their antimicrobial and soothing properties. Overall, the figure highlights the integrated role of these plants in enhancing winter wellness through their diverse bioactive compounds and therapeutic actions rooted in traditional Indian dietary practices.

Conclusion

The present study highlights the rich traditional knowledge and scientific basis underlying the use of local plants as nutraceuticals during the winter season in India. The integration of field observations, household practices, and literature evidence demonstrates that easily available species such as *Allium sativum*, *Zingiber officinale*, *Phyllanthus emblica*, and *Ocimum sanctum* play a vital role in strengthening immunity, preventing respiratory ailments, and maintaining overall health in cold conditions. The findings reaffirm the value of indigenous wisdom, often preserved by elder generations, in promoting sustainable and preventive healthcare practices. Encouraging the use of these nutraceutical plants not only fosters community health awareness but also supports biodiversity conservation and self-reliance in primary healthcare. Hence, reviving and documenting such local plant-based nutraceutical knowledge is essential for integrating traditional wisdom with modern nutritional science and for promoting holistic well-being during the winter months.

References

Di Sotto A, Vitalone A and Di Giacomo S. (2020). Plant-derived nutraceuticals and immune system modulation: an evidence-based overview. Vaccines. 8(3): 468. DOI: 10.3390/vaccines8030468.

Gidwani B, Bhattacharya R, Shukla SS, Pandey RK. (2022). Indian spices: past, present and future challenges as the engine for bio-enhancement of drugs: impact of COVID-19. Journal of the Science of Food and Agriculture. 102(8): 3065-3077.

Jena N, Rout S, Mishra S and Kumar S. (2025b). Evaluation of quantitative ethnobotanical uses in Mayurbhanj district, Odisha, India. Journal of Biodiversity and Conservation. 9(1): 1-29.

Jena N, Vimala, Singh B, Patra A, Sharma BP, Hossain E and Kumar S. (2025a). Methods for ethnobotanical data collection, phytochemistry, antioxidant, anthelmintic, and antimicrobial activities for pharmacological evaluation of medicinal plants. Journal of Biodiversity and Conservation. 9(2): 87-107.

Kumar S. (2025). Data collection from literature for biological sciences, medicinal plants research, ethnobotany, and pharmacology: a methodological overview. Journal of Biodiversity and Conservation. 9(2): 167-169.

Medoro A, Davinelli S, Colletti A, Di Micoli V, Grandi E, Fogacci F, Scapagnini G and Cicero AFG. (2023). Nutraceuticals as modulators of immune function: a review of potential therapeutic effects. Preventive Nutrition and Food Science. 28(2): 89-107. DOI: 10.3746/pnf.2023.28.2.89.

Narain JP. (2012). The challenge of health & environment: profiling risks & strategic priorities for now & the future. Indian Journal of Medical Research. 136(2): 185-191.

Pandey MM, Rastogi S and Rawat AK. (2013). Indian traditional ayurvedic system of medicine and nutritional supplementation. Evidence-based Complementary and Alternative Medicine. 2013: 376327. DOI: 10.1155/2013/376327.

Puri V, Nagpal M, Singh I, Singh M, Dhingra GA, Huanbutta K, Dheer D, Sharma A and Sangnim T. (2022). A comprehensive review on nutraceuticals: therapy support and formulation challenges. Nutrients. 14(21): 4637. DOI: 10.3390/nu14214637.

Sengupta S, Bhattacharyya D, Kasle G, Karmakar S, Sahu O, Ganguly A, Addya S and Das Sarma J. (2021). Potential immunomodulatory properties of biologically active components of spices against SARS-CoV-2 and Pan β-Coronaviruses. Frontiers in Cellular and Infection Microbiology. 11: 729622. DOI: 10.3389/fcimb.2021.729622.

Siddiqui RA and Moghadasian MH. (2020). Nutraceuticals and nutrition supplements: challenges and opportunities. Nutrients. 12(6): 1593. DOI: 10.3390/nu12061593.

Tudu CK, Dutta T, Ghorai M, Biswas P, Samanta D, Oleksak P, Jha NK, Kumar M, Radha, Proćków J, Pérez de la Lastra JM and Dey A. (2022). Traditional uses, phytochemistry, pharmacology and toxicology of garlic (*Allium sativum*), a storehouse of diverse phytochemicals: a review of research from the last decade focusing on health and nutritional implications. Frontiers in Nutrition. 9: 949554. doi: 10.3389/fnut.2022.929554.

Wazib S, Ambardar Y, Quasimi H, Alam S, Afghan S and Alam MI. (2025). Potential therapeutic use of Indian medicinal plants for preeclampsia management. Journal of Ayurveda and Integrative Medicine. 16(6): 101218. DOI: 10.1016/j.jaim.2025.101218.