Scientia Review, Vol. 02(05), May 2026, pp. 18-19 ISSN: 3107-7919

Scientia Review

Website: www.scientiafoundation.in

POPULAR SCIENCE ARTICLE

Lion's Mane Mushroom: A Comprehensive Insight into Nutritional, Pharmaceutical Values and its cultivation

Vijay Kumar* & Ashok Chhetri

Multi Technology Testing Centre & Vocational Training Centre, College of Fisheries, Central Agricultural University (Imphal), Lembucherra, Agartala- 799210, Tripura, India

Email: vnarwal777@yahoo.com

Received: 04 May 2026
Revised: 05 May 2026
Accepted: 06 May 2026
Published online: 07 May 2026

Article ID: SR01119

Citation: Kumar, V., & Chhetri, A. (2026). *Lion's Mane Mushroom: A Comprehensive Insight into Nutritional, Pharmaceutical Values and its cultivation*. *Scientia Review*, 2(5), 18-19

Abstract

Hericium erinaceus, commonly known as Lion's Mane mushroom or monkey skull mushroom, is a unique edible fungus valued for its nutritional richness and medicinal properties. This article highlights its taxonomy, habitat, distribution, nutritional composition, pharmaceutical potential, and cultivation practices. Scientific studies reveal its neuroprotective, anticancer, and metabolic benefits, making it a promising candidate for functional foods and therapeutic applications.

Keywords: Taxonomy, Habitat, Distribution, Nutritional composition, Pharmaceutical, Therapeutic

Introduction

Mushrooms have long been recognized as both food and medicine, particularly in Asian traditions. Among them, *Hericium erinaceus* stands out due to its distinctive appearance and remarkable health benefits. Commonly referred to as Lion's Mane, this mushroom has been used in traditional Chinese medicine for centuries to enhance vitality and treat neurological disorders (Thongbai *et al.*, 2015). Modern scientific research has confirmed that it contains a variety of bioactive compounds, including polysaccharides, phenolics, and terpenoids, which contribute to its therapeutic properties (Wasser, 2011; De Silva *et al.*, 2012). Notably, compounds such as hericenones and erinacines stimulate nerve growth factor synthesis, linking the mushroom to cognitive health and neuroprotection (Kawagishi *et al.*, 1991). Due to its dual role as a functional food and medicinal resource, *H. erinaceus* has gained global attention in nutraceutical and pharmaceutical industries.

Taxonomy

Hericium erinaceus belongs to the family Hericiaceae, order Russulales, and class Agaricomycetes. It is a basidiomycete fungus characterized by its spiny, beard-like fruiting body (Kirk *et al.*, 2008). The species has several synonyms in taxonomic literature, reflecting historical classification changes. Its distinct morphology aids identification, although closely related species may require molecular tools for confirmation.

Habitat

This mushroom typically grows as a saprotroph or weak parasite on hardwood trees, especially oak and beech. It is commonly found on dead or decaying wood, but occasionally appears on living trees through wounds or cracks (Boddy and Wald, 2007). The species prefers temperate forest environments and fruits seasonally, often during autumn months in natural habitats (Thongbai *et al.*, 2015).

Distribution

Hericium erinaceus is widely distributed across the Northern Hemisphere, including Europe, Asia, and North America (Thongbai *et al.*, 2015). Although naturally occurring populations are declining in some regions due to habitat loss, it is extensively cultivated in Asian countries. Reports also indicate occurrences in Australia, though it is absent in Africa, highlighting its ecological specificity (Kew *et al.*, 2007).

Nutritional Values

The mushroom is nutritionally rich, containing proteins, dietary fiber, vitamins, and essential minerals while being low in fat and carbohydrates (Phillips *et al.*, 2011). It also contains bioactive polysaccharides such as β-glucans, which contribute to immune modulation. Its balanced nutritional profile supports its classification as a functional food

with health-promoting benefits.

Pharmaceutical Potential

H. erinaceus exhibits diverse pharmacological activities, including anticancer, antioxidant, antimicrobial, and neuroprotective effects (Thongbai *et al.*, 2015). Compounds like erinacines and hericenones stimulate nerve growth factor synthesis, aiding cognitive function (Mori *et al.*, 2009). Additionally, polysaccharides demonstrate immunomodulatory and antitumor properties, making the mushroom a promising candidate for therapeutic drug development.

Cultivation

Cultivation of *Hericium erinaceus* has become increasingly important due to its economic and medicinal value. The mushroom can be grown on a variety of substrates, including hardwood sawdust, agricultural wastes, and synthetic media. Spawn can be produced by following the method given by Kumar and Chhetri, 2024. Controlled environmental conditions such as temperature, humidity, and aeration are essential for optimal growth and fruiting. Submerged fermentation techniques are also used to produce mycelial biomass rich in bioactive compounds, particularly erinacines. Advances in biotechnology have enabled large-scale production, improving yield and consistency. Additionally, studies suggest that substrate composition significantly influences metabolite production, emphasizing the need for optimized cultivation strategies. This adaptability makes *H. erinaceus* suitable for commercial farming and pharmaceutical exploitation.

Conclusion

Hericium erinaceus is a remarkable mushroom combining nutritional richness with significant medicinal potential. Its bioactive compounds support various health benefits, particularly neurological and immune functions. With increasing scientific validation and cultivation advancements, this species holds great promise as a functional food and future therapeutic resource.

References

Boddy, L., Frankland, J., & Van West, P. (Eds.). (2007). *Ecology of saprotrophic basidiomycetes* (Vol. 28). Elsevier.

De Silva, D. D., Rapior, S., Hyde, K. D., & Bahkali, A. H. (2012). Medicinal mushrooms in prevention and control of diabetes mellitus. *Fungal diversity*, *56*(1), 1-29.

Kew, R. B. G. (2007). World checklist of selected plant families. *http://www. kew. org/wcsp/home. do*.

Kawagishi, H., Ando, M., Sakamoto, H., Yoshida, S., Ojima, F., Ishiguro, Y., Ukai, N., & Furukawa, S. (1991). Hericenones C, D and E, stimulators of nerve growth factor (NGF)-synthesis, from the mushroom Hericium erinaceum. *Tetrahedron Letters*, *32*(35), 4561-4564.

Kirk, P. M., Cannon, P. F., Minter, D. W., & Stalpers, J. A. (2008). Dictionary of the fungi Wallingford. *UK: CABI*, *335*.

Kumar, V., & Chhetri, A. (2024). Evaluation of five different species of Pleurotus for their yield potential and growth parameters under Tripura's conditions of North East India. *Indian Phytopathology*, *77*(4), 1103-1107.

Mori, K., Inatomi, S., Ouchi, K., Azumi, Y., & Tuchida, T. (2009). Improving effects of the mushroom Yamabushitake (Hericium erinaceus) on mild cognitive impairment: A double-blind placebo-controlled clinical trial. *Phytotherapy Research: An International Journal Devoted to Pharmacological and Toxicological Evaluation of Natural Product Derivatives*, *23*(3), 367-372.

Phillips, K.M., Ruggio, D.M., Horst, R.L., Minor, B., Simon, R.R., Feeney, M.J., Byrdwell, W.C., & Haytowitz, D. B. (2011). Vitamin D and sterol composition of 10 types of mushrooms from retail suppliers in the United States. *Journal of agricultural and food chemistry*, *59*(14), 7841-7853.

Thongbai, B., Rapior, S., Hyde, K. D., Wittstein, K., & Stadler, M. (2015). Hericium erinaceus, an amazing medicinal mushroom. *Mycological Progress*, *14*(10), 91.

Wasser, S. P. (2011). Current findings, future trends, and unsolved problems in studies of medicinal mushrooms. *Applied microbiology and biotechnology*, *89*(5), 1323-1332.