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Health Benefits and Nutritional Values of Milky Mushroom

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Milky mushroom (*Calocybe indica*) is a tropical edible mushroom native to India that has gained importance as a functional food because of its high nutritional value, medicinal potential, and economic significance. This article reviews the origin, classification, nutritional composition, health benefits, medicinal properties, cultivation practices, and culinary uses of milky mushroom. Rich in protein, dietary fiber, vitamins, minerals, beta-glucans, ergothioneine, and phenolic compounds, it provides multiple health benefits including immune enhancement, cardiovascular protection, blood sugar regulation, digestive support, neuroprotection, antioxidant activity, and cholesterol reduction. Scientific studies also indicate antimicrobial, anti-inflammatory, fibrinolytic, and potential anti-cancer properties. The mushroom can be cultivated efficiently on agricultural wastes such as paddy straw under tropical conditions, offering a sustainable and profitable livelihood opportunity for small-scale farmers. Its firm texture, mild flavour, and adaptability make it suitable for diverse culinary preparations. As consumer awareness regarding functional foods increases, milky mushroom is emerging as an affordable and environmentally sustainable superfood with significant nutritional, medicinal, and socio-economic value in India and other tropical regions.



Introduction

The milky mushroom, scientifically named *Calocybe indica*, belongs to the family Lyophyllaceae. It was first formally described by mycologists Purkayastha and Chandra in 1977 after being discovered growing naturally in West Bengal, India. Since then, it has become one of the most widely cultivated tropical edible mushrooms across South and Southeast Asia. Its popular name comes from its appearance — bright white, thick, fleshy, and milk-like in colour. Unlike many mushrooms that turn brown or grey, milky mushrooms retain their pristine white colour even after cooking, making them visually appealing on the plate. Their firm texture and mild, pleasant flavour make them highly adaptable across a wide range of cuisines.

Why Is Milky Mushroom Special?

What truly sets milky mushroom apart from most tropical food crops is the combination of qualities it offers simultaneously:

- Outstanding nutritional richness — high protein, diverse vitamins, essential minerals
- Scientifically validated medicinal properties — antioxidant, antimicrobial, anti-inflammatory
- Suitability for tropical climates — thrives in hot, humid conditions (25–38°C)
- Ease of cultivation — can be grown on paddy straw and agricultural waste
- Long shelf life — remains fresh for 5–7 days without refrigeration
- Excellent market demand — fetches premium prices in urban and rural markets.

Classification and Botanical Identity

Understanding the scientific classification of milky mushroom helps appreciate its unique biological characteristics:

- Kingdom: Fungi
- Division: *Basidiomycota*
- Class: *Agaricomycetes*
- Order: *Agaricales*
- Family: *Lyophyllaceae*
- Genus: *Calocybe*
- Species: *Calocybe indica Purkayastha & Chandra, 1977*

The name *Calocybe* comes from the Greek words ‘kalos’ (beautiful) and ‘cybe’ (head), aptly describing the mushroom’s beautiful white cap. It is the only *Calocybe* species native to tropical India and grows naturally during the pre-monsoon months of April to June in many parts of the country.

The Complete Nutritional Profile

Milky mushrooms are classified as functional foods — a category of foods that provide measurable physiological benefits beyond basic nutrition. Their nutritional profile is both broad and deep, covering macronutrients, micronutrients, vitamins, minerals, and bioactive compounds. The comprehensive table below details every major nutritional component and its role in the body.

Nutrient / Compound	Nature / Form	Primary Health Role
Protein	Essential amino acids — complete profile	Growth, muscle repair, enzyme synthesis
Carbohydrates	Complex carbs + dietary fiber	Energy supply, stable blood glucose
Fat	Very low; zero cholesterol	Heart-friendly; safe for weight management
Dietary Fiber	Beta-glucans, hemicellulose	Gut health, cholesterol control, bowel regularity
Vitamin B1 (Thiamine)	Water-soluble	Nerve function, carbohydrate metabolism
Vitamin B2 (Riboflavin)	Water-soluble	Energy production, skin health
Vitamin B3 (Niacin)	Water-soluble	DNA repair, cholesterol regulation
Vitamin B5	Water-soluble	Hormone synthesis, wound healing
Vitamin C	Antioxidant	Immunity, collagen production
Vitamin D	Ergosterol-derived (UV exposure)	Calcium absorption, bone health
Folate	Water-soluble	Cell division, fetal development
Potassium	Macro-mineral	Blood pressure regulation
Calcium	Macro-mineral	Bone and dental strength
Phosphorus	Macro-mineral	Bone matrix, energy storage (ATP)
Iron	Micro-mineral	Haemoglobin synthesis, prevents anaemia
Zinc	Trace mineral	Immune function, wound healing
Selenium	Trace antioxidant mineral	Cell protection, thyroid health

Ten Proven Health Benefits

The health benefits of milky mushroom are not folklore — they are grounded in documented nutritional science and pharmacological research. Here we explore the first five of ten major health benefits in depth.

- Boosts and Balances the Immune System
- Protects the Heart and Cardiovascular System
- Manages Blood Sugar and Supports Diabetic Health
- Supports Healthy Weight Management
- Protects the Brain and Supports Cognitive Function
- Improves Digestive Health and Gut Microbiome
- Builds and Maintains Bone Health
- Powerful Antioxidant and Anti-Aging Properties

- Anti-Cancer Potential:
- Reduces Cholesterol Levels:

Health Benefits Summary and Medicinal Importance

The table below provides a concise summary of all ten health benefits covered in pages 4 and 5, along with the key compounds responsible for each effect:

No	Health Benefit	Mechanism / Key Compounds
1	Immunity Booster	Beta-glucans stimulate immune cells (macrophages, NK cells, T-lymphocytes)
2	Heart Health	Zero cholesterol + potassium + fiber reduce BP and LDL cholesterol
3	Diabetes Management	Low GI; fiber slows glucose absorption; improves insulin sensitivity
4	Weight Management	Low calorie, high fiber — promotes satiety, replaces high-cal foods
5	Brain & Cognitive Health	Ergothioneine accumulates in brain; reduces cognitive decline risk
6	Digestive Health	Prebiotic fiber feeds good bacteria (Lactobacillus, Bifidobacterium)
7	Bone Strength	Vitamin D + Calcium + Phosphorus — prevents osteoporosis
8	Anti-Aging	Antioxidants neutralise free radicals; slow cellular aging
9	Anti-Cancer Potential	Inhibits tumour angiogenesis; induces apoptosis in cancer cells
10	Cholesterol Reduction	Beta-glucans lower LDL; improve blood circulation

Cultivation, Economic Value and Culinary Uses

Cultivation — Turning Agricultural Waste into Nutrition

One of the most remarkable aspects of milky mushroom is that it can be grown using paddy straw — the agricultural waste left after rice is harvested. This waste-to-nutrition conversion makes milky mushroom farming an environmentally sustainable and economically empowering activity, particularly for small and marginal farmers in tropical regions.

Ideal Growing Conditions

- Temperature: 25–38°C (optimal 30–35°C) — no cooling infrastructure needed in tropical India
- Humidity: 80–90% relative humidity
- Substrate: Paddy straw (primary), sugarcane bagasse, wheat straw, cotton waste
- Spawn run (mycelial growth): 15–20 days after spawning
- First harvest: 25–35 days after spawning
- Cropping period: 45–60 days with 3–4 flushes (harvesting cycles)
- Biological efficiency: 60–80% (kg of mushroom per 100 kg dry straw)

Step-by-Step Overview of Cultivation Process

1. Substrate preparation — paddy straw is soaked in water for 12–16 hours, then sterilised
2. Spawning — milky mushroom spawn (mycelium on grain) is mixed into the cooled substrate
3. Spawn run — bags are kept in a dark room at 28–32°C for 15–20 days until fully colonised
4. Casing — a thin layer of soil or coir dust is applied over the colonised substrate
5. Fruiting — humidity is maintained at 85–90% and the first mushrooms appear within 7–10 days
6. Harvesting — mushrooms are twisted and pulled carefully when caps are fully expanded

Culinary Uses — Cooking with Milky Mushrooms

Milky mushrooms have a firm, chewy, meaty texture that holds up beautifully through long cooking. Their mild umami flavour absorbs spices, sauces, and aromatics readily, making

them extraordinarily versatile. Unlike button mushrooms, which can become watery when cooked, milky mushrooms retain their shape and texture even in slow-cooked gravies.

Conclusion

The milky mushroom is not a newly discovered wonder imported from foreign lands — it is a homegrown treasure, first found in Indian soil, developed by Indian researchers, and cultivated by Indian farmers. What modern science has done is confirm, in measurable and reproducible detail, what traditional food wisdom already knew: that this beautiful white fungus is extraordinarily good for human health. Its nutritional profile is exceptional — protein-rich, vitamin-packed, mineral-dense, cholesterol-free, and low in calories. Its health benefits span nearly every major system of the human body — immune, cardiovascular, neurological, skeletal, digestive, and endocrine. Its medicinal properties, while still being actively researched, show genuine pharmacological promise in antioxidant, antimicrobial, anti-inflammatory, and anti-cancer applications. Beyond individual health, milky mushroom cultivation addresses larger social and environmental goals: it empowers small farmers with high-return, low-investment livelihoods; it converts agricultural waste into premium nutrition; it requires no pesticides or chemical fertilisers; and it can be produced year-round in tropical India without sophisticated infrastructure. As awareness grows, as research deepens, and as cultivation spreads to more farmers and more regions, milky mushroom (*Calocybe indica*) is poised to move from a regional favourite to a nationally recognised health food — and eventually, perhaps, a globally acclaimed superfood that the world knows was discovered in India. Eat it often. Cook it creatively. Share it generously. Your body — and the farmers who grow it — will thank you.

References

1. Jayakumar, T., Thomas, P. A., & Geraldine, P. (2009). In-vitro antioxidant activities of an ethanolic extract of the oyster mushroom, *Pleurotus ostreatus*. *Innovative Food Science and Emerging Technologies*, 10(2), 228–234.
2. Indian Council of Agricultural Research (ICAR). (2020). Mushroom cultivation in India — Technologies and practices. ICAR Directorate of Mushroom Research, Solan.
3. Tamil Nadu Agricultural University (TNAU). (2023). Milky mushroom cultivation guide. TNAU Agritech Portal. <https://agritech.tnau.ac.in>
4. Grand View Research. (2023). Edible mushroom market size, share & trends analysis report. Grand View Research Inc. <https://www.grandviewresearch.com>
5. Kalac, P. (2013). A review of chemical composition and nutritional value of wild-growing and cultivated mushrooms. *Journal of the Science of Food and Agriculture*, 93(2), 209–218. <https://doi.org/10.1002/jsfa.5960>
6. Rajarathnam, S., & Bano, Z. (1987). *Pleurotus* mushrooms. Part I. Morphology, molecular biology, taxonomy, production and applications. *Critical Reviews in Food Science and Nutrition*, 26(2), 157–223.