

Oyster Mushrooms: Versatile Mushrooms with Potential Health Benefits

Aditya^{1*}, Neeraj^{2*}, R.S Jarial³, Kumud Jarial⁴ and J.N. Bhatia⁵

^{1,2}Department of Agriculture and Environmental Sciences, National Institute of Food Technology Entrepreneurship and Management, Kundli-131028 (NIFTEM-K), Sonipat, Haryana (*An Institute of National Importance of India*).

^{3,4}Department of Plant Pathology, Dr. YSP UHF, Solan, Himachal Pradesh.

⁵Retired Professor (Plant Pathology), CCS HAU, Hisar, Haryana.

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Oyster mushrooms are a type of fungus that is native to East Asia. They are named for their fan-shaped appearance, which resembles an oyster. Oyster mushrooms hold significant importance due to their exceptional culinary and nutritional value, as well as their potential contributions to environmental sustainability (Aditya and Jarial, 2023; Aditya et al., 2021; Aditya and Bhatia, 2020). These mushrooms are praised for their delicate flavour and versatile culinary application, oyster mushrooms are rich in protein, dietary fibre, essential amino acids and various vitamins and minerals. Moreover, these mushrooms are known for their potential to aid in cholesterol reduction and immune system enhancement (Aditya et al., 2020a, b). Beyond their nutritional benefits, oyster mushrooms play a crucial role in sustainable agriculture, as they can be cultivated using various waste materials, such as agricultural residues and sawdust, reducing the strain on traditional farming resources. Their rapid growth and ability to break down organic matter also make them valuable decomposers in ecosystems (Aditya et al., 2022b, d). Oyster mushrooms offer a harmonious blend of culinary delight, nutrition, medicinal and ecological significance (Aditya et al., 2022c, e).

Nutritional Value of Oyster Mushrooms

Oyster mushrooms are a good source of protein, fibre and vitamins. They are also a good source of antioxidants, which can help protect the body from damage caused by free radicals. Oyster mushrooms have a notable nutritional profile that contributes to their popularity in both culinary and dietary contexts. These mushrooms are low in calories and fat, making them an excellent choice for those seeking a nutritious and flavourful addition to their meals. Oyster mushrooms are a good source of protein, containing all the essential amino acids needed by the human body. Additionally, they are rich in dietary fibre, which supports digestive health and can contribute to a feeling of fullness. Oyster mushrooms contain a range of vitamins, including B vitamins such as B₁ (thiamine), B₂ (riboflavin),

B₃ (niacin), B₅ (pantothenic acid) and B₇ (biotin). These vitamins play critical roles in energy metabolism, nerve function, and skin health. The mushrooms also contain significant amounts of minerals like potassium, phosphorus, copper and selenium (Aditya et al., 2022a). Potassium is essential for maintaining proper heart and muscle function, while copper supports iron absorption and helps with the formation of red blood cells. Selenium acts as an antioxidant, protecting cells from oxidative stress. One of the unique nutritional benefits of oyster mushrooms is their potential to produce ergosterol, a precursor of vitamin D when exposed to sunlight or ultraviolet (UV) light. This characteristic makes them a rare plant-based source of vitamin D, which is vital for bone health, immune system function and overall well-being.

- **Protein:** Oyster mushrooms are notable for their relatively high protein content compared to other types of mushrooms. On average, oyster mushrooms contain about 2 to 3 grams of protein per 100 grams of raw weight. Protein is essential for building and repairing tissues, and it can also help boost the immune system (Aditya and Bhatia, 2021a, b, c).
- **Fibre:** Oyster mushrooms are known for their relatively high fibre content, making them a beneficial addition to a balanced diet. The exact fibre content can vary based on factors such as the mushroom's size, age and growing conditions, but on average, oyster mushrooms contain around 1 to 2 grams of dietary fibre per 100 grams of fresh weight (Aditya and Bhatia, 2021a, b, c). Fiber is important for digestive health and it can also help lower cholesterol levels.
- **Vitamins:** Oyster mushrooms are a good source of vitamins, including vitamin C, vitamin B₁, and vitamin B₂. Vitamin C is an antioxidant that can help protect the body from damage caused by free radicals. Vitamin B₁ is important for energy metabolism and vitamin B₂ is important for cell growth and repair.
- **Antioxidants:** Oyster mushrooms are a good source of antioxidants, which can help protect the body from damage caused by free radicals. Free radicals are unstable molecules that can damage cells, leading to a number of health problems, including cancer, heart disease and Alzheimer's disease (Aditya and Bhatia, 2021a).

Medicinal Benefits of Oyster Mushrooms

Oyster mushrooms are not only prized for their culinary qualities but also exhibit various medicinal benefits. They contain bioactive compounds like β -glucans, ergosterol and antioxidants that contribute to their potential therapeutic effects. Oyster mushrooms have shown promise in boosting the immune system, as β -glucans enhance immune responses by stimulating immune cells (Aditya et al., 2023a, b, c). Additionally, these mushrooms possess anti-inflammatory properties that may aid in reducing inflammation-related conditions. Oyster mushrooms could also play a role in managing cholesterol levels due to their potential to inhibit cholesterol absorption. They also contain compounds with potential anti-tumour and anti-cancer properties. Oyster mushrooms potential as a source of natural antioxidants has implications for their role in combating oxidative stress and supporting overall



health (Aditya et al., 2023a; Tiwari et al., 2023).

- **Anticancer properties:** Oyster mushrooms contain compounds that have been shown to have anticancer properties. Studies found that oyster mushroom extract inhibited the growth of cancer cells in the liver. Another study found that oyster mushroom extract was effective in killing leukaemia cells.
- **Immune-boosting properties:** Oyster mushrooms contain compounds that can help boost the immune system. Oyster mushroom extract increases the production of white blood cells, which are important for fighting infection.
- **Anti-inflammatory properties:** Oyster mushrooms contain compounds that have anti-inflammatory properties. Inflammation is a major factor in many chronic diseases, such as heart disease, cancer and arthritis.
- **Blood sugar-lowering properties:** Oyster mushrooms contain compounds that can help lower blood sugar levels. This makes them a good food choice for people with diabetes or prediabetes.
- **Heart-healthy properties:** Oyster mushrooms contain compounds that can help improve heart health. Oyster mushroom extract reduces cholesterol levels and improves blood vessel function.
- **Skin-protective properties:** Oyster mushrooms contain compounds that can help protect the skin from damage caused by the sun and pollution.

Bioactive Compounds Found in Oyster Mushrooms

A number of bioactive compounds are found in oyster mushrooms. These compounds have been shown to have a number of health benefits, including boosting the immune system, fighting cancer, reducing inflammation and lowering cholesterol levels (Aditya et al., 2022a; Aditya et al., 2023a).

Bioactive Compound	Function
Beta-glucans	Soluble dietary fibre with immune-modulating properties, aids in reducing inflammation and supports immune function.
Ergosterol	Can be converted to vitamin D when exposed to sunlight or UV radiation, promoting bone health and overall well-being.
Lentinan	Polysaccharide with immunomodulatory properties, studied for enhancing the immune response, particularly in cancer therapy.
Triterpenoids	Compounds with anti-inflammatory and potential anti-cancer effects, contributing to health-promoting properties.
Polysaccharides	Reduce inflammation



Vitamins C and B ₁₂	Boost the immune system
Zinc	Improves wound healing
Chitin	Complex carbohydrate with potential immune-enhancing effects and gut health benefits.

- **Beta-glucans:** These are a type of polysaccharide that is found in the cell walls of oyster mushrooms. They have been shown to enhance the immune system by stimulating the production of white blood cells. Beta-glucans have also been shown to have anti-cancer properties.
- **Ergosterol:** It is a compound that is found in the cell walls of oyster mushrooms. It is a precursor to vitamin D, which is important for bone health and immune function.
- **Lentinan:** It is a type of polysaccharide that is found in the cell walls of oyster mushrooms. It has been shown to induce apoptosis, or programmed cell death, in cancer cells. Lentinan has also been shown to have anti-inflammatory properties.
- **Triterpenoids:** Oyster mushrooms contain triterpenoids, which are compounds with anti-inflammatory and potential anti-cancer effects. These compounds contribute to the overall health-promoting properties of oyster mushrooms.
- **Polysaccharides:** These are a type of carbohydrate that is found in the cell walls of oyster mushrooms. They have been shown to reduce inflammation by suppressing the production of inflammatory cytokines.
- **Vitamins C and B₁₂:** These are two important vitamins that are found in oyster mushrooms. Vitamin C is an antioxidant that can help protect the body from damage caused by free radicals. Vitamin B₁₂ is essential for red blood cell production and nerve function.
- **Zinc:** It is an important mineral that is found in oyster mushrooms. Zinc is essential for wound healing and immune function.
- **Chitin:** Oyster mushrooms contain chitin, a complex carbohydrate that has been linked to potential immune-enhancing effects and gut health benefits.

Oyster Mushrooms: A Safe and Delicious Mushroom

Oyster mushrooms are a safe and delicious mushroom that can be enjoyed by people of all ages. They are a good source of nutrients and have a number of health benefits. Oyster mushrooms have a mild flavour that can be enhanced by marinating them in a flavourful liquid before cooking. These mushrooms can be cooked in a variety of ways, but they are best when cooked quickly over high heat. Oyster mushrooms can be eaten raw, but they are best cooked to bring out their flavour and texture. Oyster mushrooms can be added to a variety of dishes, including stir-fries, soups, stews, omelets and salads. Oyster mushrooms are versatile mushrooms that can be added to a variety of



dishes. They can be cooked in stir-fries, soups, stews, and omelets. They can also be eaten raw in salads or sandwiches. When choosing oyster mushrooms, look for mushrooms that are firm and have a smooth surface. Avoid mushrooms that are soft, bruised or have mold. Oyster mushrooms can be stored in the refrigerator for up to 3-6 days. They can also be frozen for up to 6 months. Oyster mushrooms are a healthy and delicious mushroom that can be enjoyed by people of all ages. They are a good source of nutrients and have a number of health benefits.

In conclusion, oyster mushrooms stand as a remarkable example of nature's bounty, offering a multifaceted array of properties that intersect culinary delight, nutritional richness, and potential health benefits. With their abundance of bioactive compounds such as beta-glucans, ergosterol, antioxidants, lentinan, triterpenoids and amino acids, these fungi have captured the attention of researchers and health enthusiasts alike. From supporting immune function and reducing inflammation to promoting bone health through provitamin D synthesis, oyster mushrooms hold promise as a functional food. Furthermore, their role in sustainable agriculture, facilitated by their ability to grow on diverse organic materials, underscores their potential contributions to ecological balance. As ongoing research continues to unravel their intricate properties, oyster mushrooms emerge as a symbol of the harmonious fusion between gastronomic pleasure and holistic well-being. As global concerns about food security and ecological impact intensify, oyster mushrooms emerge as a versatile, nutrient-dense solution that could reshape the way we approach sustenance, marking a promising path toward a more resilient and sustainable food future.

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