

## Mushrooms: A New Approach as Wholesome Food

**Ashutosh Rajoriya and Shubhank Dixit**  
School of Agricultural Sciences, G H Rasoni University  
Saikheda, M.P

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In many areas of human life as well as the functioning of ecosystems, the significance and potential of mushrooms are widely acknowledged. A great deal of concerns, including the desire for high-quality food, environmental pollution, unemployment, and some ecological challenges, could be resolved amicably by mushroom science. It generates an adequate amount of high-quality food with a high biological value that is appropriate for people of all ages, from young children to the elderly. Many human health issues have medicinal mushrooms as a treatment. Farming communities' socioeconomic conditions are enhanced by mushroom husbandry, which generates extra income from the use of agricultural wastes. Furthermore, it creates a great deal of opportunities for employment. After mushroom cultivation, the substrate that is left over is more pleasant and easily digested by animals. It can also be used as a source of mulch for soil and other purposes, as well as manure.

Growing mushrooms reduces complex organic pollutants and consumes large amounts of organic waste, which contributes to the preservation of a clean environment. Mycorrhizal fungi are important for restoring degraded areas of land. Mycelium from mushrooms may filter wastewater, break down organic waste, break down harmful chemicals, and promote tree development through mutually beneficial relationships. These advantageous qualities allow for the conversion of wastelands into green plantations in certain situations. The following are the acknowledged values of mushrooms in many spheres:

- ✚ Complete, quality, health food
- ✚ Medicinal values in terms of reducing cholesterol, preventing heart attack
- ✚ Enhance farmer's income
- ✚ Economically important wild mushrooms
- ✚ Cordyceps sinensis. Morchella species
- ✚ Cleaning of environment by decomposing organic wastes
- ✚ Micorrhizal relationship with plants

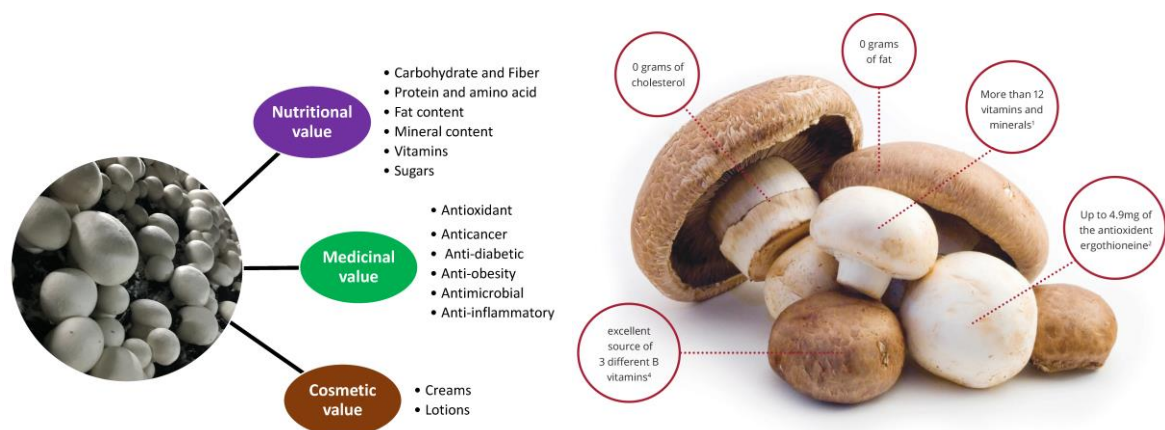
- ✚ Remediation of contaminated lands
- ✚ Reduces certain pollutions issues
- ✚ Source of biofuels viz., briquettes, biogas
- ✚ Complex ecological functions



### **Nutritional Values of Mushrooms**

Since mushrooms include all of the nutrients that humans need in the right amounts, they are regarded as a full, health meal that is good for individuals of all ages, from children to the elderly. There are several elements that affect the nutritional content of mushrooms, including species, variety, development stage, and environmental circumstances. Mushrooms are high in vitamins, minerals, dietary fiber, and protein. Dietary fibers and fermentable fibers make up the majority of carbohydrates; starch and small amounts of sugars are absent. Rich in threonine and valine, but lacking in sulfur-containing amino acids (methionine and cysteine), edible mushrooms are a good source of protein. An additional benefit is the high percentage of polyunsaturated fatty acids and low lipid content, which includes no cholesterol. The ergosterol present in mushrooms is the precursor for Vitamin D synthesis in human body.

Furthermore, mushrooms are a great source of vitamins, particularly C and B (niacin, folic acid, thiamine, and riboflavin). In addition to other necessary minerals (Cu, Zn, and Mg) in trace amounts, the fruit bodies of mushrooms have higher concentrations of the mineral's potassium, sodium, and phosphorous; nevertheless, they are generally low in iron and calcium. Above all, mushrooms include compounds that promote growth, such as enzymes, alkaloids, sterols, antioxidants, and other unidentified chemical complexes.



## Medicinal Values

Edible fungi have been used extensively in folk medicine and valued for their many health benefits for thousands of years. Certain bioactive substances found in medicinal mushrooms, such as immunomodulating substances, low molecular weight proteins, polysaccharides, and triterpenoids, have therapeutic qualities. Thus, studies on mushrooms have demonstrated that they strengthen the immune system, improve overall health, reduce the risk of cancer, stop the growth of tumors, assist in blood sugar regulation, fight off bacteria, fungus, and viruses, lessen inflammation, and aid in the body's detoxification processes.

The low-fat content, high proportion of unsaturated fatty acids, and lack of cholesterol in the mushroom diet make it heart-healthy. Rich in potassium and low in sodium, mushrooms improve blood circulation and salt balance, making them a good choice for people with high blood pressure. The low-calorie value, lack of starch, and minimal sugar content of mushrooms make them a preferred food choice for patients with diabetes and obesity. Because fiber feeds good bacteria in the human digestive system, the fermentable dietary fiber in mushrooms contributes to the health of the bowel system.

Chemicals that limit tumor activity, like Kresin, are frequently employed in the pharmaceutical industry as top cancer treatments. Flammulina velutipes and Agaricus bisporus contain ergothioneine, a particular type of antioxidant that helps maintain healthy kidney, bone marrow, liver, and skin as well as slowing down the aging process. Mushrooms contain antioxidants that scavenge free radicals in the body system and slow down cell maturation. As a result, it has anti-aging properties. The complex mixture of minerals and polysaccharides (beta-glucans) that are extracted from mushrooms is what controls and fortifies the human immune system.

### **Economical Value**

The general public knows less about the economic benefits of mushrooms. Since mushrooms are saprophytic organisms, they make use of agricultural and organic waste. Farmers now have less work to do in terms of disposing of their farm waste. By using these residues, high-quality mushroom production can generate additional revenue. Growers receive a good income from the seasonal and commercial cultivation of mushrooms. Agriculture and related activities generate a huge amount of employment. An additional source of income is the value addition of mushrooms to high-quality products. The farmer receives additional income from the productive use of spent mushroom substrate, such as biofuel, biogas production, manures, potting medium, etc.

Mushrooms have a major impact on the medical industries. Mushrooms are a great source of valuable medications for the treatment of cancer, diabetes, high cholesterol, depression, and weakened immune systems. The potential for therapeutic mushrooms is expanding daily in both domestic and international markets. Above all, wild mushrooms are widely available worldwide and have significant economic value. The most expensive type of mushroom is called *Cordyceps sinensis*, an endomopathogenic species that grows on insects at high altitudes in the Indo-Tibetan region. One of the most delicious wild mushrooms found in the Himalayan region is *Morchella*, which can cost up to ~10,000 per kilogram. Similarly, there may be a lot more wild mushrooms out there that have not yet been discovered.

### **Environmental Value**

The term "environment" describes the entirety of the biotic and abiotic elements that surround the organism. Living things coexist on Earth in one form or another. Likewise, macrofungi, commonly known as mushrooms, have numerous important functions in the environment. Because mushrooms break down complex lignin-rich compounds, they also break down organic waste that is rich in lignin in the surrounding area, creating a clean environment. In India, the majority of wheat and paddy straw residues are consumed in the mushroom production process; otherwise, these residues are burned in open fields, contributing significantly to air pollution. Certain bioremediation programs successfully utilize a large number of mushroom mycelia.

### **Ecological Value**

Each creature on our planet has specific roles to play in its ecosystem. Since all living things are interdependent within a specific ecosystem, each one plays a unique role in preserving the Eco balance of this planet. Mushrooms participate in the decomposition of organic debris, which contributes to different nutrient cycles in ecological systems. Few fungi associate symbiotically with specific plants and trees in a mycorrhizal relationship. Many wild creatures, such as insects (beetles, flies, gnats, springtails, centipedes, etc.), slugs, squirrels, and deer, rely on wild mushrooms as a food source. The parasitic mushroom causes diseases, stunts the growth and fertility of many wild florals, and otherwise negatively impacts the health of the ecosystem. Other ecological roles of wild mushrooms include pollution reduction, bioremediation, and preservation of soil health. Many other ecological roles played by mushroom is yet to known to this world.

Common Name	Scientific Name	Importance
Button mushroom	<i>Agaricus bisporus</i>	Edible mushroom with medicinal and industrial use
Shiitake mushroom	<i>Lentinus edodes</i>	Edible mushroom with medicinal properties
Oyster mushroom	<i>Pleurotus ostreatus</i>	Edible mushroom with cholesterol-reducing effect
Paddy straw mushroom	<i>Volvariella volvacea</i>	Edible mushroom
Ear fungus	<i>Auricularia auricula</i>	Medicinal value
Reishi mushroom	<i>Ganoderma lucidum</i>	Medicinal mushroom
Nameko mushroom	<i>Pholiota nameko</i>	Food supplements
White jelly fungi	<i>Tremella fuciformis</i>	Food supplements
Truffles	<i>Tuber aestivum, T. melanosporum, T. magnatum</i>	These gourmet delights
Morels	<i>Morchella angusticeps, M. esculenta</i>	Delicious edible mushroom
Maitake	<i>Grifola frondosa</i>	Edible mushroom with anti-tumour properties
Turkey Tail	<i>Trametes versicolor</i>	Medicinal mushrooms (too tough to be edible)
Giant Puffball	<i>Calvatia gigantea</i>	Edible when young
Chicken of the Woods	<i>Laetiporus sulphureus</i>	Taste similar to chicken
Enokitake	<i>Flammulina velutipes</i>	Used in soups
Shaggy Mane	<i>Coprinus comatus</i>	Antibiotic properties
Black Trumpet	<i>Craterellus cornucopioides</i>	Best tasting edible mushroom
Porcini	<i>Boletus edulis</i>	Used in soups and sauces
Matsutake	<i>Tricholoma matsutake</i>	Flavour and aroma in cooking

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