



# Oyster mushroom: A future of next generation cosmetical

Senila R. kashmani<sup>1</sup>, Dr. Murtaza Hajoori<sup>2\*</sup>, Neha Maisuria<sup>3\*</sup>

Student<sup>1</sup>, Head of Department<sup>2</sup>, Teaching Assistant<sup>3</sup>

Department of microbiology at Bhagwan Mahavir College of Basic and Applied Sciences

**ABSTRACT:** *Mushroom is a macro fungus that produces a sufficient quantity and quality of food that is biologically valuable and suitable for various groups, including youngsters and the elderly. One of the most widely grown species of mushrooms among all the numerous varieties is the oyster mushroom. The oyster mushroom, Pleurotus ostreatus, is also known as "Dhingra" in India. It is an Agaricaceae family and class Basidiomycetes. Oyster mushrooms can grow at moderate temperatures ranging from 20 to 30 C and humidity 55-70%. Its medicinal benefits, ability to thrive in varying temperature conditions, and diverse agricultural by-products make it an excellent choice for those with heart conditions. The global cultivation of oyster mushrooms has experienced growth due to their medicinal benefits. The plant world is highly valued for its nutritional and culinary benefits. Edible mushrooms, commonly referred to as the meat of plants, are cherished for their dietary and culinary advantages. A plethora of palatable dishes can be derived from the diverse range of vegetables available in the world.*

**Keywords:** *Pleurotus ostreatus*, Basidiomycetes, humidity, cultivation, medicinal benefits

## Introduction

A mushroom is a macro fungus that has distinctive fruiting bodies that can either be epigeous or hypogeous (Chang & Miles, 1992). Due to the lack of chlorophyll mushrooms cannot synthesize their food so it depends on dead and decay as their saprophytes. And it has the potential to solve many growing global problems like food demand, unemployment, environmental pollution, etc. Mushroom produces a sufficient quantity and quality of food that is biologically valuable and suitable for various groups, including youngsters and the elderly.

One of the most widely grown species of mushrooms among all the numerous varieties is the oyster mushroom. The oyster mushroom, *Pleurotus ostreatus*, is also known as "Dhingra" in India and is a member of the Agaricaceae family and class Basidiomycetes. Oyster mushroom is renowned for its high concentration of vitamin C, vitamin B and other beneficial properties. The percentage of protein content ranges from 1.6% to 2.5%. Not only that, it is also found that the Niacin content is tenfold higher than vegetable sources. Mineral salt is a crucial component for the proper functioning of the human body (Randive & Sonali, 2012). In addition to its nutritional value, it is renowned for its healing properties in diabetics and cancer (Sivrikaya, Hüseyin, Latife & Akin, 2002). The reason for its elevated state is due to its significant level of the perfect ratio of potassium and sodium is considered to be ideal for individuals afflicted with cardiac ailments and elevated blood pressure (Sharma, Ram, Chandra, & Pokhrel, 2013). Further, this lacks cholesterol. The substances present can be digested easily (Oei P., 2005). Mushrooms are wealthy in protein, vitamins, minerals, and fabulous sources of  $\beta$ -glucan, selenium, thiamine, riboflavin, niacin, pantothenic acid and folic acid, etc. (Poucheret, Fons f & Rapior, S, 2006). Hence, it can be a rich source of nutrients for the majority of individuals living in poverty worldwide belong to or work in low-income industries.

It has been studied that mushrooms give useful impacts as stimulating imperative vitality, keeping up one's ideal weight and increase life span (Bashir, A& Vaida, N,2014 )&(Chang, S.T&Wasser, S.P,2012) As of now mushrooms have been drawn around the world and considered the foremost curiously characteristic sources with differing and one-of-a-kind bioactivities, counting immunomodulatory, antioxidant, anti-inflammatory, antidiabetic, antibacterial, antifungal, antiviral, antitumor, hepatoprotective, diminishing glucose and lipid levels (Enshasy&Hatti-Kaul,2013),( Kalač,2013)They make up an endless, and however Generally undiscovered, source of capably unused pharmaceutical items. Personal care products, commonly known as cosmetics, are utilized to purify and enhance the appearance of the skin (Millikan,2001) Now adays, there is an increasing interest among consumers in cosmetics that consist of natural and/or organic components since people want products that are regarded as healthier, ecologically friendly, and organic (Antigna, Nohynek,&Clouzeau, 2011) Cosmetics are now utilizing macrofungi, specifically mushrooms, as a natural ingredient omega 3, 6, and 9 fatty acids, carotenoids, B12, D, and A are among the essential vitamins. In addition to containing C, E, B1, B2, B6, Niacin, Folate, and Pantothenic Acid, there are indications of them in the substance. Zinc, Copper, Iron, Iodine, folate, thiamine, and Calcium are among the essential minerals. (Kausar,. 1988)&(Hyde& Bahkali, 2010)The potent antioxidant and anti-inflammatory properties found in mushroom ingredients have become a popular solution for addressing cosmetic issues like fine lines, wrinkles, uneven tone, and texture (Yuanzheng&Moon-Hee,2016)

Currently, numerous varieties of mushrooms are utilized as cosmetic ingredients in topical creams, lotions, ointments, serums, and facial preparations. Several types of mushrooms, including Shiitake, Maitake, Reishi or Lingzhi, Fu Ling, Yartsa Gunbu, cauliflower mushroom, and jelly fungi are commonly used in traditional medicine in Eastern Asian countries such as China, Japan, and Korea, according to studies cited in references (Chorvathova,, Bobek &Ginter E ,1993),(Yuan F Wang & CL,Jiang Y 2007)&9Jandaik CL, Goyal ,1995). Western countries are more familiar with the Portobello mushroom (*Agaricus bisporus*), oyster mushroom (*Pleurotus ostreatus*), elm oyster mushroom (*Hypsizygus ulmarius*), and tinder fungus (*Fomes fomentarius*), per sources,(Bellettini, Marcelo , Fernanda , Helayne ,Gerson , Suelen , Polyanna &Agenor ,2019),(Wasser,2010)&(Chandrasekaran& D.S. Shin,2012).There are several well-liked types of mushrooms, such as *Agaricus sub rufescent*, *Coprinus comatus*, *Hericium erinaceus*, *Mycoleptodonoides Aitchison*, *Phellinus linteus*, *Schizophyllum commune*, and *Volvareilla volvacea*, among others ( Silva, Rapior ,Hyde, &Bahkali2012),(Mortimer, Karunarathna, Gui, &Yang, X,2012) ,(Lee, Park, Shin, H.J Kwon , & Yeom, M ,2011)&(Badalyan,2014). The extraction method for obtaining mushroom components can also be utilized for other purposes. The formulation of beauty products. Wild and cultivated mushrooms offer a rich supply of active ingredients, encompassing both fruit bodies and mycelia. Mushroom derivatives are intricate blends of metabolites that can be found in liquid or semi-solid substances, as well as in dry powder form. These formulations are meant to be utilized for cosmetic or nutritional purposes, either topically or orally. The extracts from mushrooms are commonly referred to as powerful antioxidants and natural hydrating agents due to their ability to provide a unique blend of easily absorbable nutrients, which sets them apart from the standard components such as vitamin C, vitamin E, and other well-known additives. These substances possess antioxidants and anti-inflammatory compounds, which aid in the treatment of various skin issues caused by free radical activity and inflammation (Kalač ,2013).

### **Advantageous Components of Mushrooms**

Numerous considers have been done to discover out more approximately the distinctive components in mushrooms that are useful to the skin.it found that mushrooms contain numerous bioactive metabolites, such as lectins, polysaccharides, phenolics and polyphenolics, terpenoids, ergosterols, and unstable natural compounds (Wasser,2010). Mushroom polysaccharides, counting lentian, schizophyllan, polysaccharide Kerstin (PSK), and polysaccharide peptide (PSP), are presently accessible on the pharmaceutical advertise. A huge sum, on the off chance that not all, higher Basidiomycetes mushrooms contain biologically-active polysaccharides in fruiting bodies, refined mycelia, and refined broth( De Silva, Rapior ,Hyde, &Bahkali,2012)&(Carluccio,1989).

## Cultivation strategies

### Preparation of substrate for spawn production

For the preparation of substrate for spawn production wheat were washed, dried and boiled separately for 50 minutes and again dried in air by spreading on polythene sheet to remove surface moisture. After that 2 % CaCO<sub>3</sub> and 1 % chalk powder were mixed thoroughly on the polythene sheet. Then 250 g substrate were taken in to each polypropylene bag and plugged with cotton and rubber band.(Chang, S. T. 1992).

### Preparation of substrate

For the preparation of paddy, mustard straw and sugarcane bagasse chopped (2.54 cm size) and dry these substrates were soaked in water for about 24 hours to get wet and achieved 65-70 % of moisture content The next day, all these wet substrates were separated from water and excess water was removed properly. Then all these substrates were chopped and boiled for 1 hour. After cooling, the pasteurized substrates were kept on the concrete floor and limed with 10 % CaCO<sub>3</sub> solution. Then rice bran, gypsum, and molasses were mixed with the pasteurized paddy mustard straw and rice bran & gypsum with the sugarcane bagasse. The substrates were thus ready to be used in mushroomcultivation (Haque, A. B. M. A. 2004).

### Culture method

Then big polypropylene bags full of each type of substrates were placed in cylindrical block device. At first, a layer of prepared substrate was taken into a big polypropylene bag and then about 50 g of previously prepared spawn was spreader on the outer side of substrate with cautions. This spawning process was repeated several times in the same manner. But last layer of spawn was covered with less amount of substrate. Then the bags were packed tightly and kept on cylindrical block device.(R. C,K. M. Nasiruddin, Haque & Munsur,2008).

### Overview of applications in diverse area

Mushrooms have been used in folk medicine for centuries in countries ranging from ancient Rome and Greece to China and India. The health benefits of mushrooms, though, have only been thoroughly studied scientifically in recent decades. These studies have been mostly test-tube and lab based, so more studies are needed to confirm the effects of mushrooms on people.

### Help Heart Health

Eating oyster mushrooms may be beneficial for your heart. This may be due to beta-glucans, which are fibers that make up the cell walls of yeast and fungi. When fermented by bacteria in your gut, beta-glucans produce short-chain fatty acids that are able to reduce your body's production of cholesterol.(R. C. Dey, K. M. Nasiruddin, M. S. Haque and M. A. Z. Al Munsur,2008).

### Conclusion

From this review, it can be concluded that mushrooms have the ability to address a number of global issues, such as the demand for food and environmental degradation.

Oyster mushrooms like *Pluerotus ostreatus* have a lot of medicinal benefits and a high nutritional value. Since research on button mushrooms and other mushrooms has been done, this study is innovative and can be utilised as a possible source of cosmetics because oyster mushrooms contain a variety of phytochemicals.

Face serum and other cosmetic-based products can be made using *Pluerotus ostreatus* in the cosmetics sector. The skin can be moisturised and acne can be avoided. Additionally, it possesses anti-inflammatory and anti-bacterial properties.

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