

Pink Oyster Mushroom (Pleurotus djamor): Introduction and General Farming Practices

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ABSTRACT

Pleurotus djamor known as “Pink Oyster Mushroom” as the colour of the fruiting bodies are pink. This is a unique *Pleurotus* mushroom species among all the members of the *Pleurotus* species. They are nutritionally very rich composed of high quality of protein, high fibre, low fat, vitamin and essential minerals. These mushrooms have very unique taste that this can be considered as a good alternative to meat or non veg. *P. djamor* can be grown on a wide range of agrowastes like wheat straw, soyabean, coffee husk, rice husk and paddy straw etc. But the best results only be available on the substrate which are having higher content of lignocelluloses. In India its cultivation can be popularized by working on its cultivation technology refinement, substrate availability and create awareness among the people regarding the health benefits of *P. djamor*. The cultivation of *P. djamor* is still following the same cultivation process as followed in the other species of oyster mushroom.

INTRODUCTION

Pleurotus djamor (Rumph. ex Fr.) Boedijn, was commonly known as pink oyster mushroom. It belongs to the kingdom fungi, Phylum Basidiomycota, Class Basidiomycetes, Order Agaricales and Family Pleurotaceae. A study was done by the Adel et al. (2023) that in ancient Egypt two

mushrooms are very commonly available were *Pleurotus* spp. and *Agaricus bisporus*. Records suggested that the *Pleurotus* mushroom was the mostly included in the diets of the Royal Egyptian families and mushroom were prohibited for all common people of the Egypt. This mushroom was first time identified in

1750 by the German botanist Georg Eberhard Rumphius as *Boletus secundus arboreus*. In 1821, Elias Magnus Fries reclassified it as *Agaricus djamor*. Finally in 1959 Karel Bernard Boedijn class them as *Pleurotus djamor* (Robert *et al.*, 2014).

The pink oyster mushroom has acquired its name from the colour of its fruiting body/sporocarp which is of pink colour. They have the fan shaped convex to plane pileus having size of 2-6 cm width and 3-7 cm length. The gills of the mushrooms are pink to cream in colour with 0.5-0.7 μm in width. The stipe of mushroom has mat of white hair which are very short and some time they are absent. The flavour and taste of the *P. djamor* has been detailed as the like the non-veg taste i.e. meaty and chewy texture. This mushroom has very unique sour taste when it was eaten as salad/raw. The pink oyster mushroom has a very short self-life. Till date there are no reports of poisonous mushroom which are morphological similar to *P. djamor*. Pink oyster mushrooms are known as the “functional mushrooms” because of its health and nutritional benefits. *P. djamor* is composed of between 32-48% carbohydrates and 11-45% protein (Table 1) (Vega and Franco, 2013, Carrasco-Gonzalez *et al.*, 2017). It’s also significantly low in fat and provides several vitamins (Vitamins B1 and B2 Vitamin D) and minerals (K, P, Mg, Ca, Na, Zn, and Fe). Pink mushrooms are strongly recommended for people looking to implement a healthy, nutrient-packed addition to their diet. Similarly, it’s a fantastic alternative to meat due to its bacon-like taste and meaty consistency. Several studies have shown that this mushroom contains antibiotic, anticarcinogenic, antiviral, antibacterial, antidiabetic, antiparasitic, antifungal, antioxidant and anti-inflammatory properties, among many others (Hemmes *et al.*, 2022). *P. djamor* could inhibit the growth of various bacterial and fungal pathogen infection during

the cultivation with an efficacy of 55 %. Pink oyster mushroom has very remarkable results on remitting of kidney injuries through its antioxidant properties and they are also found effective as antiaging mushroom (Salmone, 2017; Illuri *et al.*, 2022).

Table 1. Nutritional Composition of the *P. djamor*

| Sr. No. | Composition | Percentage (%) |
|---------|---------------|----------------|
| 1. | Protein | 11.3%-43.1% |
| 2. | Carbohydrates | 35.5–42.4% |
| 3. | Fat | 0.1–4.6% |
| 4. | Crude fiber | 7.3–12.2% |
| 5. | Ash | 6.2–8.3% |

P. djamor is a tropical species of oyster mushroom which can be successfully grown in all tropical region of the world. This mushroom growing naturally on hardwood trees, palms leaves, rubber trees leaves and bamboo leaves. Under the controlled conditions/ cultivation this mushroom can be easily grown on the various type of agrowastes (Piska, 2017). In India *P. djamor* has been successfully cultivated by some mushroom growers. But still its cultivation is not popular in India. There are various lacunas in field of mushroom cultivation which are needed to be address 1. Lack of cheap and reliable cultivation technology, 2. Lack of quality seed/spawn availability, 3. Lack of research on substrate availability for cultivation, 4. awareness regarding the mushroom farming and its health benefits. 5. Misconception related to colour of this mushroom that they are poisonous. These above mentioned five points are the their due to which its cultivation not only pink oyster mushroom but overall other mushroom cultivation in India is not picking up the pace like China, which is producing world 75 % of mushroom.



A. Fruiting bodies formation of *P. djamor*



B. Harvested Fruiting Bodies of *P. djamor*

General cultivation practices of *Pleurotus* Mushroom

Oyster mushroom (*Pleurotus spp.*) is commonly called Dhingri in India. It has oyster-like shape because of which it is popularly known as oyster mushroom. Its cultivation can be done on number of agricultural wastes and organic waste materials. The important substrates include straw of different cereals, sugarcane waste, cotton waste, jute, groundnut pod shells, small wood pieces, saw dust, maize cobs, banana pseudostems, etc. depending upon the widespread availability of these materials. General cultivation method of cultivation of *Pleurotus* mushroom (Kumar and Chhetri, 2023).

Substrate preparation

It is commonly cultivated in Tripura on paddy straw, due to their easy availability in large quantities. The straw of 4-6 cm size is chopped and dipped in cold water for 10-12 hours. Straw can be sterilized by various methods as given below:

1. **Hot water treatment:** The soaked straw is dipped in hot water at 80°C for 2 hours. Hot water treatment makes hard substrate soft so that growth of the mycelium takes place very easily. This method is not suitable for large scale commercial cultivation.
2. **Steam pasteurization:** In this method pre-wetted straw is pasteurized by passing steam through the straw for 2-3 hours. This method is used for commercial cultivation.
3. **Chemical sterilization technique:** In this method 7.5g bavistin and 125 ml formalin are dissolved in 100 litre water and slowly poured on the heap of wheat straw. Soaked straw is covered with a polythene sheet. After about 18 hours the straw is taken out and excess water drained off.

Spawning

Spawning rate in wet substrate is 2 to 2.5 % and the spawning is done in layers or even in thorough spawning care should be taken that the spawn gets uniformly mixed with the substrate, while in layer method the spawn is mixed after each layer of 3-4 cm thickness of straw. Polythene bags are found economical for cultivation of *Pleurotus*. After filling the bags with substrate bags should be tied with thread on top and holes has to be made for diffusion of gases and heat generated inside. Spawned mushroom bags have to be kept in a mushroom house at 22-26°C temperature with relative humidity 80-85%.

Cropping and management

After preparation of mushroom bags, white cottony growth will be appeared in mushrooms bags within 18-20 days. These bags are cut open and water should be sprayed daily in morning and evening time to maintain R.H 80-85% and temperature 20-22 °C. Pinning starts appearing within next 5-7 days and mushroom for harvest are available within 4-5 days of pinning.

Harvesting & Yield

Mature mushrooms are harvested by twisting and lifting of fruiting bodies with help of two fingers and a thumb. The cropping stage lasts for 30-45 days by maintaining at the 20 – 25°C, 85 – 92 % humidity. The average yield comes around 100-125 kg mushrooms / 100 kg dry paddy straw or substrates.

Marketing and Preservation

Harvested mushrooms are packed in polythene bags and sold in the market as fresh or packed bags can be stored for 4-6 days in refrigerator. For long term storage these mushrooms can be dried and different pickles can be prepared.

CONCLUSION

P. djamor has added variety to the mushroom industry not only in number but in term of nutrition and unique health benefits. This mushroom hold very extensive arena for its cultivation in countries like India where agrowaste is abundant available throughout the year. Second is the climatic condition (i.e. tropical and sub-tropical) required for the cultivation of *P. djamor* are present in the 80-90% of the Indian regions.

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