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An overview on oyster mushroom: Improving human health and quality of life

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Abstract
The oyster mushroom (*Pleurotus* spp) is a popular mushroom due to its tremendous stability of cap and stem, cooking qualities and longer shelf life. Among the consumers, where *Pleurotus* spp mushrooms is very trendy, but currently this mushroom is not cultivated in large scale. Due to its gradual depletion of nutrients due to their subsequent utilization of mushroom mycelium. Hence good growth and better yield of mushroom can be achieved when different substrates are supplemented. The basic plant substrates that can be used for oyster mushroom cultivation are saw dust, wheat straw, rice husk, Mango, Jackfruit, Coconut, hulls, straw, stalk, paper corn cobs, waste cotton, leaves and pseudo stem of banana, water hyacinth, duck weed, rice straw etc. This substrate does not require costly processing method and enrichment material which helps in supporting the growth. Among the different substrates used the study has revealed that faster mycelial growth is consistent with better yield and highest biological efficiency.

Keywords: Oyster mushroom, improving human health, quality of life

Introduction
Along with *Agaricus bisporus*, the oyster mushroom, *Pleurotus ostreatus*, has been widely farmed and sold. Several research have been published that *P. ostreatus* contains around 100 bioactive compound substances, which could be used as a dietary fibre source. Because they are well known for converting crop leftovers to food protein, oyster mushrooms are the easiest and least expensive commercial mushrooms to grow. They are considered a possible source of revenue, alternative food production, employment, and recycling of agricultural wastes. The fungi grow naturally on and close to trees in temperate and subtropical forests round the world, and they are grownup commercially in several countries (Kulshreshtha *et al*., 2014; Khan *et al*., 2016) [13, 10]. Oyster mushrooms area unit devoured in an exceedingly kind of cuisines and area unit particularly standard in Chinese, Japanese, and Korean cookery. They will be dried and area unit usually devoured cooked (Kuforiji and Fasid, 2008; Zhu *et al*., 2013) [11, 32].

Fig 1: Cultivated fruiting body of oyster mushroom

Oyster mushrooms square measure beloved the planet over for his or her delicate texture and delicate, savory flavor (Akinyele *et al*., 2012; Kulshreshtha *et al*., 2014; Lamrood and Ralegankar, 2013) [3, 13, 15].

The caps of the mushrooms are usually large, thin, oyster- or fan-shaped, and they are white, grey, or brown in colour, with gills covering the sides. The caps are often frilly-edged, and they can be found in clusters of little mushrooms or individually as larger mushrooms. Oyster mushrooms are more expensive than white however tonne mushrooms, but less so than rarer mushrooms like morels, and they require very little preparation time because they'll be utilised whole or chopped. (Novotný *et al.*, 2004; Akinyele *et al.*, 2011; Zhu *et al*., 2013) [20, 2, 32].

Beneficial Aspects of Oyster Mushroom

Mushrooms, an extremely priced delicacy for quite two thousand years, are currently consumed by many of us P: Pros and cons of *P. florida* cultivation for managing waste of handmade paper and cardboard industries. Mushroom cultivation is profitable commercial enterprise. Several agricultural and industrial wastes may be used as substrates for production of *Pleurotus* species (Zeid *et al.*, 2019) [33].

Studies conducted by Tan (1981) [29] discovered that cotton waste was the best substrate for the cultivation of *Pleurotus ostreatus* (Kuforiji OO and Fasidi IO, 2008) [11]. Cereal bran wealthy in macromolecule is sometimes added to the substrate in *P. ostreatus* cultivation to stimulate mycelia growth and increase the yield of mushroom wood and sugarcane pulp were the simplest substrates for growing of oyster mushroom than different agro- based substrates (Padhye *et al*., 2017) [24].

O'Brien *et al.*, (2019) [21] rumored that wood substrate for mushroom production ought to bear an amount of composting to breakdown the polyose and polymer elements of the wood in order to unharness the essential materials for the institution of mushroom plant structure. Also, the demand of mushroom has been escalating due to changing consumer behaviour, development and market expansions in recent times (Menaka *et al.*, 2020). However, development of cost efficient and alternate substrate to cultivate oyster mushroom without sacrificing mushroom quality is a major focus of many researchers and grower's oyster mushroom can help in solving the problems of malnutrition and disease the present study of review work has showed that different substrates are for their effective utilization by cultivation of oyster mushroom.

Baysal *et al*., (2003) [6] investigated paper waste supplemented with rice husk, manure and humate for oyster agaric cultivation. Highest yield for contemporary weight was recorded as 350.2 grams within the substrate containing to 0% rice husk. The values of economic cultivation of mushrooms, particularly in an exceedingly developing economy like Federal Republic of Nigeria, is that the convenience of enormous quantities of many agro–industrial wastes which may function substrates for the cultivation of mushrooms (Menaka *et al*., 2020).

Nasir Ahmad Khan (2002) [19] has discovered that oyster fungus gave the most yields in the 1st flush followed by second and third flush. The maximum yield was obtained on kikar wood 282.2gm followed by mango wood 257.7gm, mixed wood 233gm, simbal wood 216.5gm and kail 200.5gm. Oyster mushroom showed comparatively a lot of yield on management treatment of cotton waste as compared to alternative substrates (Van Acken *et al.*,1999) [30], PAHs (Hammel *et al.*, 1991; Johannes *et al*., 1996) [8, 9], organic and synthetic dyes (Ollikka *et al.*, 1993; Heinfling *et al.*, 1998) [23] and pentachlorophenol (Lin *et al*., 1990), the most biological potency was obtained in kikar wood that was 70.56 %. Rock bottom biological potency was obtained in kikar wood that was fifty.12 %. Among all substrates, sawdust of kikar proven the simplest substrates for the effective cultivation of *Pleurotus ostreatus*.

Banjo *et al*., (2004) [4] has been reportable that mushrooms will grow on sliced cocoa pods, cotton waste, dried sliced maize straw, oil palm (fibre and bunch) wastes, tobacco straw, used tea leaves, rice straw, sugarcane pulp, newsprint, recent rags and wood. Silva *et al*. (2005) [25] reportable that plant part extension is said to bio convenience of N after they found that eucalyptus residues supplemented with cereal bran supported quick growth. However, the low quantity of obtainable N (N) within the ligno-cellulosic substrate of wood elements is usually considered as a limitation to its use as mushroom substrate. *Pleurotus* species ar common and wide cultivated throughout the world principally in Asia and Europe due to their straightforward and low-price production technology and better biological efficiency (Mane *et al*., 2007) [16].

Moonmoon *et al.*, (2010) [18] studied king oyster agaric *Pleurotus eryngii* on saw dirt and rice straw in Asian nation and located that saw dirt showed the highest biological potency (73.5%) than alternative strains (Marcelo *et al*., 2019) [17]. They has additionally reportable on saw mud, the yield and potency were better than those cultivated on rice straw, however, on straw; the mushroom mature bodies were larger in size. This study shows the prospects of *P. eryngii* cultivation in Asian nation and suggests any study in controlled atmosphere for higher yield and production.

Stanley *et al.*, (2011) [28] has evaluated the effect of supplementing corn cob substrate with rice bran on yield of *Pleurotus pulmonarius* (Fr) Quel. Un- supplemented corn cob (0% supplementation) gave the simplest yield in terms of the mean diameter of plant structure 5.50cm, mean recent weight of fruiting bodies 53.2g, mean height of stem 3.64cm and variety of healthy mature bodies as twelve. The smallest amount yield was recorded with half-hour supplementation as follows: mean diameter 3.20 cm, mean recent weight of mature bodies 30.0g, mean height of stipe 1.65 cm and variety of healthy mature bodies as five in terms of amount and quality, the un-supplemented substrate produced higher edible mushrooms.

Conclusion

According to this worldwide survey, different kinds of wastes have been proven to be useful for oyster mushroom growing. So, every grower producing oyster mushrooms can make their own best substrate choice from among all those genera or species. The substrates may be useful in the production of a valued protein rich food (Mabrouk and Ahwanyi, 2008; Akinyele *et al*., 2011; Kulshreshtha *et al*, 2013) [1, 14]. Cultivation of oyster mushroom on various agricultural residues offers economic initiatives for agribusiness to examine and use them to produce protein rich mushroom products (Oei *et al.*, 2003) [22]. This has encouraged investigating the effect of substrate supplementation on sustained yield of edible mushrooms in various harvests with regards to commercial production. Many factors may be involved in the difference of nutritional composition of mushrooms cultivated in different substrates.

We must not be at all surprised that the evaluation of all these kinds of different wastes leads us to a renewed appreciation for what is called a waste. Growing mushrooms gives so much satisfaction and produces so much food and income that further use of this practice can result in a great complete

contentment of families and villages (Singhal *et al.*, 2005; Dulay *et al.*, 2012 and Kulshreshtha *et al.*, 2014, Kulshreshtha *et al.*, 2021) [27, 7, 13, 12].

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