Effect of various culture media on growth of
Pleurotus eous

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Abstract
A preliminary experiment was carried out to analyse the growth performance of P. eous mushroom cultures using different media. Eight culture media viz., Ashby’s manitol agar, yeast extract agar, yeast manitol agar, Corn meal agar, Potato dextrose agar, potato malt agar, Czapek’s dox agar and Malt extract agar were used. The maximum colony diameter of P. eous was recorded on potato dextrose agar (90 mm), followed by Malt extract agar (88.16), Yeast manitol agar (87.50 mm), Yeast extract agar (86.33 mm),Corn meal agar (86.10), Potato malt extract (85.66) and minimum colony diameter was recorded on Ashby’s manitol agar (14.66 mm) which was lesser than Czapek’s dox agar (85.30 mm).

Keywords: Pleurotus eous, culture media, potato dextrose agar, corn meal agar

Introduction
Mushrooms were so far considered as luxury food especially among the rich community because of their unique flavor and excitingly different taste but now they have grown to a common man food. Mushrooms are traced as special kind of food, since ancient times. The Greeks believed that mushrooms provided strength for warriors in battle and Romans regarded them as “Food of Gods” or “Gods Flesh”, which were served only on festival occasions.

China leads in world mushroom production by cultivating more than 20 different types of mushrooms on commercial scale. USA is the second largest producer of mushrooms sharing 16 per cent of the world production (Prakash, 2012; Singh et al., 2011) [8, 10]. Currently India stands 54 in the world ranking of mushroom producers. India ranks 6th and world market share 4.44 per cent. Mushroom production in India has been estimated at 48000 tonnes per annum. At present, only three mushrooms viz., button mushroom (Agaricus bisporus), oyster mushroom (Pleurotus spp.) and paddy straw mushroom (Volvariella spp.) is being cultivated on commercial and small scale in India. Button mushroom is mainly cultivated in mechanized mushroom farms on commercial scale in States such as Jammu & Kashmir, Himachal Pradesh, Uttarakhand, etc. To date approximately 70 species of oyster mushroom (Pleurotus spp.) have been recorded. The oyster mushroom (Pleurotus spp.) also called ‘Dhingri or Abalone’ (Chadha and Sharma, 1995) [3]. Oyster mushroom is usually coloured including dark blue, white, cream, brown, or yellow and pink.

Oyster (Pleurotus spp.) mushroom is the 2nd largest cultivated mushroom in the world and its annual production is 797,000 tones. India produces only small quantity (25000 tons) of oyster mushroom in the state of Orissa, Karnataka, Maharashtra and Andhra Pradesh etc. Various Pleurotus species have been shown to possess a number of medicinal properties, such as anti-tumor, immunomodulatory, antigenotoxic, antioxidant, anti-inflammatory, hypcholesterolaemic, antihypertensive, antiviral and antimicrobial activity (Gregori et al., 2007) [3]. The production of oyster mushroom has been increasing steadily recent past years. with the availability of sub tropical climate in most part of India, widely adoptability, low cost growing technology, high biological efficiency, ability to grow on variety of agro- wastes and easy to adopt cultivation technology, the cultivation of oyster mushroom has been popularized in various state of country.

There are quite suitable for commercial cultivation of various Pleurotus species including P. sajar-caja, P. eous, P. florida, P. flabellatus, P. ostreatus etc. Pleurotus eous produces pinkish coloured fruit bodies either singly or in clusters. The pileus is oyster shaped initially but becomes deeply lobed and folded at maturity. The stipe is solid, rigid, eccentric and pink in
colour. This mushroom grew excellently at 18-24 °C temperature range but can grow up to 28 °C.

Materials and Methods
Effect of different culture media
To study the effect of different liquifiable solid cultural media on cultural characteristics of *P. eous*, eight culture media viz., Ashby’s manitol agar, yeast extract agar, yeast manitol agar, Corn meal agar, Potato dextrose agar, potato malt agar, Czapek’s dox agar and Malt extract agar were used. The media were sterilized in autoclave at 15LBS/inch² pressure for 20 min. Autoclaved and cooled media were poured @ 20ml/plate in sterilized glass Petri plates (90 mm dia.), and allowed to solidify at room temperature. On solidification of the media, Petriplates of each culture medium (two plates/medium/replication) were inoculated by placing at the centre 5 mm mycelia disc of actively growing seven days old pure cultures of *P. eous* and incubated at 20°C temperature.

Experimental details
Design : Completely Randomized Design (CRD)
Replications : Three
Treatments : Eight

Treatment details
T₁ : Ashby’s manitol agar  T₅ : Malt extract agar
T₂ : Yeast extract agar  T₆ : Potato malt agar
T₃ : Czapek’s dox agar  T₇ : Corn meal agar
T₄ : Yeast manitol agar  T₈ : Potato dextrose agar (PDA)

The observations on radial mycelia growth/colony diameter (mm) were recorded at 24 hours interval and continued till 10 days after inoculation. Observations obtained were averaged and the data was analyzed statistically.

Statistical analysis
All the data related to diseases incidence and yield was statistically analyzed. Calculations were made after applying the test of significance of the means (Panse and Sukhatme, 1978) [7].

Result and discussion
Effect of different culture media
The effect of eight different culture media on colony diameter, color and growth type of *P. eous* were studied and observation obtained were presented in the table 1 and depicted in the PLATE II and Fig. 1.

The average colony diameter of *P. eous* in present investigation ranged between 14.66 to 90 mm. The maximum colony diameter of *P. eous* was recorded on potato dextrose agar (90 mm), followed by Malt extract agar (88.16), Yeast manitol agar (87.50 mm), Yeast extract agar (86.33 mm), Corn meal agar (86.10), Potato malt extract (85.66) and minimum colony diameter was recorded on Ashby’s manitol agar (14.66 mm) which was lesser than Czapek’s dox agar (85.30 mm).

### Table 1: Effect of various culture media on growth of *P. eous*

<table>
<thead>
<tr>
<th>Tr. No.</th>
<th>Treatments</th>
<th>Average colony Diameter (mm)</th>
<th>Color of colony</th>
<th>Type of growth of colony</th>
</tr>
</thead>
<tbody>
<tr>
<td>T₁</td>
<td>Ashby’s manitol agar</td>
<td>14.66</td>
<td>Light pink</td>
<td>Flatted</td>
</tr>
<tr>
<td>T₂</td>
<td>Malt extract agar</td>
<td>88.16</td>
<td>Whitish</td>
<td>Rised puffed</td>
</tr>
<tr>
<td>T₃</td>
<td>Yeast extract agar</td>
<td>86.33</td>
<td>Pink</td>
<td>Rised puffed</td>
</tr>
<tr>
<td>T₄</td>
<td>Potato malt agar</td>
<td>85.66</td>
<td>Whitish</td>
<td>Rised puffed</td>
</tr>
<tr>
<td>T₅</td>
<td>Czapek’s dox agar</td>
<td>85.30</td>
<td>Light pink</td>
<td>Flatted</td>
</tr>
<tr>
<td>T₆</td>
<td>Corn meal agar</td>
<td>86.10</td>
<td>Pink</td>
<td>Flatted</td>
</tr>
<tr>
<td>T₇</td>
<td>Yeast manitol agar</td>
<td>87.50</td>
<td>Whitish Pink</td>
<td>Rised puffed</td>
</tr>
<tr>
<td>T₈</td>
<td>Potato dextrose agar</td>
<td>90.00</td>
<td>Pink</td>
<td>Flatted</td>
</tr>
<tr>
<td>S.E. ±</td>
<td></td>
<td>0.74</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.D. 1%</td>
<td></td>
<td>2.23</td>
<td></td>
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</tr>
<tr>
<td>C.V.</td>
<td></td>
<td>1.19</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* : Mean of three replication.

Plates I: Effect of various culture media on growth of *P. eous*
The colour and growth of *P. eous* on potato dextrose agar was recorded pink and flattened growth followed by Ashby’s manitol agar (light pink and flattened growth), Yeast manitol agar (whitish pink and puffed growth) and brownish white and flattened growth on Czapek’s dox agar, creamy white and raised puffed growth on Yeast extract agar.

**Fig 1:** Effect of different culture media on growth of *P. eous*

Potato dextrose agar reported superior over all culture medium in present investigation. Similar variation in colony diameter of culture of *P. eous* has been reported by earlier workers (Gibriel et al., 1996; Dey et al., 2007; Bhatt et al., 2010; Thulasi et al., 2010; Rawate and Diwan., 2011; Stanley and Nynke., 2011; Mansue et al., 2012 and Uddin et al., 2012) [4, 10, 12, 9, 11, 7, 13].

**Conclusion**
The maximum colony diameter of *P. eous* was recorded on potato dextrose agar (90 mm), followed by Malt extract agar (88.16), Yeast manitol agar (87.50 mm), Yeast extract agar (86.33 mm), Corn meal agar (86.10), Potato malt extract (85.66) and minimum colony diameter was recorded on Ashby’s manitol agar (14.66 mm) which was lesser than Czapek’s dox agar (85.30 mm).

**References**