

SHORT COMMUNICATION

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Effect of media and temperature on the mycelial growth of oyster mushroom (*Pleurotus* sp.)

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In studies on effect of culture media and temperature on mycelial growth of three species of oyster mushroom (*Pleurotus* sp.), five culture media were tested for the growth of different *Pleurotus* sp. (*P. cystidiosus*, *P. populinus* and *P. ostreatus*). Among them growth of *P. cystidiosus* was significantly more on oat meal agar (42.00 mm). Whereas, growth of *P. populinus* and *P. ostreatus* growth were significantly more on potato dextrose agar (84.75 mm and 82.50 mm). All three species of oyster mushroom were tested for effect of different range of temperature and found that they grew well at 30°C temperature with maximum mycelial diameter 56.00 mm in *P. cystidiosus*, 87.00 mm in *P. populinus* and 48.00 mm in *P. ostreatus*.

Key words: *Pleurotus*, media, temperature, oyster mushroom

Species of oyster mushroom in the genus *Pleurotus* occur commonly as wood decomposers in forest throughout the world. The fruiting bodies of this mushrooms are distinctly shell or spatula shaped with shades of white, cream, grey, yellow, pink or light brown depending upon the species.

Most cultivable mushrooms have specific requirements for growth in axenic culture. The main factors affecting growth are nutrient sources, temperature and pH. Mushrooms can be grown on different carbon sources such as glucose, galactose, mannose, fructose, sucrose, cellulose, dextrin and starch. Nitrogen sources such as ammonium nitrate, calcium nitrate, yeast extract, soya bean, arginine and glutamic acid have been used to promote mycelial growth. Different media such as Malt Extract Agar (MEA), Potato Dextrose Agar (PDA) and Oat Meal Agar (OMA) medium support the mycelial growth of oyster mushroom.

In this paper, some recent result of tested different media and temperature for three species of oyster mushroom (*P. cystidiosus*, *P. populinus* and *P. ostreatus*) has been summarized.

Fungi were cultured on five selected media viz., Potato Dextrose Agar (PDA), Oat Meal Agar, Czapek's Dox Agar, Saborauds Medium and Richard's Agar. For the isolation of pure culture of oyster mushroom different solid media were selected. Viable mycelial culture was obtained from tissue culture of *Pleurotus* sp. picked from the trunk of the different trees.

To determine the optimum temperature under *in vitro* condition for growth and multiplication of *Pleurotus* sp. the inoculated Petri plates were incubated at different temperatures viz., 20, 25, 30, 35 and 40 °C under separate incubators.

The results of the growth were presented in Table 1 and 2.

Among the various media tested, after 14 days of inoculation, the mycelial growth of oyster mushroom viz., *P. cystidiosus* were significantly more on oat meal agar (42.00 mm) followed by potato dextrose agar (40.00 mm). Next best in the order of merit was Richards' agar (33.00 mm). While, in the case of *P. populinus* and *P. ostreatus* growth were significantly more on PDA (84.75 mm and 82.50 mm) as compared to the rest followed by oat meal agar (79.25 mm) and

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Table 1 : Effect of media on the mycelial growth of oyster mushroom *in vitro*

Selected media	Colony diameter (mm)		
	<i>P. cystidiosus</i>	<i>P. populinus</i>	<i>P. ostreatus</i>
Potato Dextrose Agar (PDA)	6.32* (40)	9.20 (84.75)	9.08 (82.50)
Oat Meal Agar	6.44 (42)	8.90 (79.25)	8.90 (79.25)
Czapek's Dox Agar	4.14 (14)	6.59 (43.50)	6.59 (43.50)
Saborauds Medium	4.84 (24)	8.73 (76.25)	9.01 (81.25)
Richard's Agar	5.72 (33)	5.76 (33.25)	5.76 (33.25)
S. Em±	0.08	0.06	0.08
CD (0.05)	0.25	0.19	0.26

Table 2 : Effect of temperature on the mycelial growth of oyster mushroom *in vitro*

Temperature (°C)	Colony diameter (mm)		
	<i>P. cystidiosus</i>	<i>P. populinus</i>	<i>P. ostreatus</i>
20	5.02* (15.75)	7.95 (63.25)	5.36 (25.25)
25	4.74 (29.00)	9.31 (86.75)	3.96 (22.75)
30	6.92 (56.00)	9.32 (87.00)	6.17 (48.00)
35	6.32 (10.00)	4.71 (22.25)	3.15 (40.00)
40	2.23 (05.00)	2.23 (05.00)	2.23 (05.00)
S. Em±	0.14	0.04	0.27
CD (0.05)	0.43	0.13	0.83

Saborauds Medium (76.25 mm) in *P. populinus* and Saborauds Medium (81.25 mm) and oat meal agar (79.25 mm) in *P. ostreatus*, respectively.

Among different media used in the present investigation i.e. PDA, OMA, Czapek's Dox Agar, Saborauds Medium and Richard's Agar, Potato dextrose agar proved to be the one of the options for the mycelial growth of *Pleurotus* species. The difference in mycelial growth on different media may occur due to availability of different carbon sources and other required nutrients. Mycelium growth was marginally better on a medium containing glucose and sucrose than other sources. Moreover, PDA might exhibit higher carbon sources and nutrients for mushroom mycelial growth in Petri plate (Sardar *et al.* 2015).

The present result supported the findings of Sardar *et al.* (2015) who reported potato dextrose agar as the best medium for the growth of *Pleurotus* sp. Chuku *et al.* (2015) also reported that the effect of culture media on mycelial growth of *Pleurotus ostreatus* on different media (MEA, PDA and SDA).

Among the various temperatures tested, the myce-

lial growth of *P. cystidiosus* and *P. populinus* were significantly more at 30°C temperature (56.00 mm and 87.00 mm). The mycelial growth was 29.00 mm and 86.75 mm at 25°C temperature, 15.75 mm and 63.25 mm at 20°C temperature respectively for *P. cystidiosus* and *P. populinus*. Moreover, the fungus *P. ostreatus* grew well at 30°C temperature with maximum mycelial diameter 48.00mm which was followed by 40.00 mm at 35°C temperature. The next best in the order was 25.25 mm at 20°C temperature. All three tested species of oyster mushroom grew well at 30°C temperature with maximum mycelial diameter.

The results corroborate the earlier findings of Ragupathi *et al.* (2016) who observed that the mycelium of oyster mushroom grew at an average temperature of 28°C-30°C. Nayak *et al.* (2015) reported that the *Pleurotus* sp. showed maximum mycelial growth of 25 °C. Rout *et al.* (2015) also carried out an investigation on the influence of incubation temperature on the linear mycelial growth of oyster species and showed that the mycelial growth of oyster mushroom was better at 25 °C.

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