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EFFECT OF DIFFERENT MEDIA AND INCUBATION PERIODS ON THE GROWTH OF SOME TROPICAL EDIBLE MUSHROOMS

The developing and underdeveloping countries are seriously facing the acute crisis of food shortage for the ever expanding population. The majority (low income group) of our population are facing the problem of malnutrition due to insufficient protein consumption. Among the available protein sources, the animal protein is no doubt the best source, but it is beyond the reach of major portion of Indian population. On the other hand, Food Scientists are trying to establish mushroom as one of the vital, nutritive, conventional protein sources from the vegetable world. In fact, tribals of our country are almost habituated to mushroom diet during rainy season.

But uptil now there is no scientific records of these mushrooms. As such it is decided to prepare a scientific account of these mushrooms in order to utilize them properly.

The basidiocarps of two tropical edible mushrooms namely *Collybia maculata* and Lentinus Sp. were collected from Ballavpur forest, Santiniketan of Birbhum district during August 1982. A small portion of the pileal tissue (particularly at the region of junction of pileus and stipe of a freshly collected basidiocarp) transfered to complete Indian mushroom medium slants supplemented with 25mg streptomycin sulphate and such slants were incubated at 30°C for 7 days. After several subscultures, the identity of cultures were confirmed and maintained for future progress.

In order to determine the suitable media for the mycelial growth of these two mushrooms, a number of selective media such as a) Glucose-Asparagine Medium (Lilly and Barnett—1951)—[Glucose—10g ; Asparagine—0.5 g, K_2HPO_4—0.5 g, Distilled water—1 litre]. b) Richards Medium (Mclean and Cook 1941)—[KNO_3—10g, KH_2PO_4—5g. $MgSO_4.7H_2O$—0.25 g, $FeCl_3$—0.2 g, Potato Starch—10g, Fructose—50 g. Distilled water—1 litre]. c) Lutz Medim (Modified, Singer—1962)—[Vitrums malt extract—10 g, NH_4NO_3—1g, $(NH_4)_2HPO_4$—1g $MgSO_4$, $7H_2O$—0.1g, $Fe_2(SO_4)_3$—0.1 g, $MnSO_4$—0.025 mg, distilled water—1 litre]. d) Complete Mushroom Medium—[Yeast extract —2g, Peptone—2.5 g, $MgSO_4$, $7H_2O$—0.5 g, $CaNO_3$—0.5 g, $(NH_4)_2HPO_4$—0.25 g, Glucose—30 g, Malt extract—10g, Thiamine—100μg Biotin—50μg, Folic acid—100μg, Inositol—50mg, $FeCl_3$—10mg, $CaCl_2$ (·1M)—5ml, $ZnSO_4$—0.1 mg, KH_2PO_4—0.25 gm, Distilled water—1 litre]. e) Whites Medium (Vasil—1959). f) Kauffman Medium [Maltose—5g, $MgSO_4$, $7H_2O$—10 g, $Ca(NO_3)_2$, $4H_2O$—50 g, KH_2PO_4—0.25 g, distilled water—1 litre] were tried.

50 ml liquid complete Indian mushroom medium was taken in 250 ml Erlenmeyer flasks, plugged properly and sterilized at 15 p.s.i for 15 minutes. The flasks were then inoculated with an agar block (5mm diameter) containing 7 days old mycelium of these test fungi and was incubated separately for 5, 10, 15 and 20 days under static condition in diffused light. Each treatment was done with 5 replicates. After 14 days of growth mycelia were harvested and mycelia are separated from the medium by filtration through a tared Sintered funnel (Jena IG-3). The filtered mycelium was washed repeatedly with distilled water to make them free from the adherent medium and dried to constant weight at 60°C for 72 hours. The dry weight of the mycelium thus obtained was taken as an index of growth.

The data obtained during the experimental period have been given in Table 1.

TABLE 1. *Effect of different media on growth of* Collybia maculata *and* Lentinus Sp. *at 14 days of growth*

Media	Dry weight of mycelial growth (mg/50 ml)*	
	Collybia maculata	*Lentinus Sp.*
Glucose-Aspargin	68.5	114.2
Richards	101.0	No growth
Lutz	127.0	87.5
Complete mushroom	356.0	452.8
Whites'	242.3	406.7
Kauffman	265.0	256.8

*Mean data of 5 replicates.

The data indicate that both *Collybia maculata* and *Lentinus Sp.* show their best growth in Complete mushroom medium which is followed by Kauffman medium, White's medium, Lutz Medium, Richards medium and Glucose-Aspargin medium in case of *Collybia maculata*. The best growth of *Lentinus Sp.* is followed by whites medium, Kauffman medium, Glucose-Asparagine medium. Lutz medium in order of sequence. In Richard's medium *Lentinus Sp.* shows no growth.

In order to determine the optimum incubation period for best growth, the inoculated flasks were incubated separately for 5, 10, 15 and 20 days under static condition in diffused light at 30°C. Every 5 days, three flasks for each treatment were harvested as before and the dry weight of mycelial mat was taken as an index of growth which are represented in Table 2.

TABLE 2. *Effect of different incubation periods on the mycelial growth of* Collybia maculata *and* Lentinus Sp. *at 30°C*

Incubation periods (days)	Dry weight of mycelial yield (mg/50 ml)*	
	Lentinus Sp.	*Collybia maculata*
5	178.0 ± 11.46	123.0 ± 6.87
10	676.0 ± 14.50	333.0 ± 7.45
15	763.5 ± 5.73	445.6 ± 19.24
20	751.5 ± 1.68	384.6 ± 11.38

*Mean data of 3 replicates.

From the data obtained it is evident that both *Lentinus Sp.* and *Collybia maculata* show their best growth at an incubation period of 15 days after which a gradual decline in growth is observed.

Further research work on physical and chemical environmental requirements for the growth of these mushrooms were in progress.

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S. K. ROY
AND
N. SAMAJPATI

Mushroom Research Centre
Mycology (Basic & Applied) Laboratory
Department of Botany
University of Calcutta
35 Ballygunge Circular Road
Calcutta-700 019

REFERENCES

Booth, C. (1971). Fungal culture Media in *Methods In Microbiology*, Vol. 4, (Ed. by C. Booth, Academic Press, London & New York. PP. 56-91.

Lilly, V. G. and Barnett, H. L. (1951). *Physiology of the fungi* MoGrow Hill Book Co., London. PP. 427.

Singer (1962). *The Agaricales*. Hafner, New York.

Vasil, J. K. (1959). Cultivation of excised anthers in vitro. *J. Exp. Bot.*, **10**, 399-408.