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

Mushrooms are one of the choiced dietery item of local people of the hilly areas of West Bengal i. e. Darjeeling, Kursheong, Kalimpong and adjacent areas. Due to the prevelance of suitable climatic conditions. several mushrooms flourish the forest beds of these areas during the rainy season. Local people are habituated to collect these mushrooms and consume them. But uptill now no scientific account of these mushrooms are available. As such in the present investigation attempt has been made to prepare the scientific account of these mushrooms in order to utilize them more economically and judicially.

Three local edible mushrooms, namely *Collybia Sp., Tricholoma Sp.*, and *Oudemansiella canarii* were collected from Kathambari, Lepchajagat and Lava respectively during June, 1982. Fresh basidiocarps of these mushrooms were brought into the laboratory and Pileus tissue culture were prepared on solid complete Indian mushroom medium. After several subculturing, the Pileus tissue culture were confirmed free from any other contaminations and maintained for future work.

In order to find out a suitable medium for growth of these mushrooms, the following media namely—

1. Glucose-Asparagine-Medium (Lilly and Barnett—1951)—[Glucose—10 g, Asparagine—0.5 g, $KH_2PO_4$—0.5 g, Distilled water—1 litre]. 2. Richards Medium (Mclean and Cook 1941)—[$KNO_3$—10 g, $KH_2PO_4$—5 g. $MgSO_4$. $7H_2O$—0.25 g, $FeCl_3$—0.2 g, Potato Starch—10 g, Fructose—50 g. Distilled water—1 litre]. 3. Lutz Medium (Modified, Singer—1962)—[Vitrums malt extract—10 g, $NH_3NO_3$—1 g, $(NH_4)_2HPO_4$—1 g. $MgSO_4$, $7H_2O$—0.1 g, $Fe_2(SO_4)_3$—0.1 g, $MnSO_4$—0.025 g, distilled water—1 litre]. 4. Complete Mushroom Medium—[Yeast extract—2 g, 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—10 g, Thiamine—100 $\mu$g, Biotin—50 $\mu$g Folic acid—100 $\mu$g Inositol—50 mg, $FeCl_3$—10 mg, $CaCl_2$ (·1M)—5 ml, $ZnSO_4$—0.1 mg, $KH_2PO_4$—0.25 g, Distilled water—1 litre]. 5. Whites Medium (Vasil=1959). 6. Kauffman Medium [Maltose—5 g, $MgSO_4$, $7H_2O$—10 g, $Ca(NO_3)_2$, $4H_2O$—50 g, $KH_2PO_4$—·25 g, distilled water—1 litre] were tried.

Erlenmeyer flask (250 ml) containing 50 ml of different sterilized (at 10 p.s.i for 20 minutes) media was inoculated with agar disc (5 mm diameter) punch out aseptically from actively growing mycelium of the respective fungi. Each flask

was inoculated with a single inoculum disc. The inoculated flasks were incubated (stationary) at 30°C for 10 days. Sufficient number of flasks were inoculated in order to have five replicates. After the incubation period the mycelia were harvested and washed several times to make it free from the adhering media and dried at 60°C for 48 hours. The dried mycelia were kept in a desiccator for 24 hours and weighed. The dry weight of mycelium was taken as an index of growth and the data obtained are presented in the Table 1.

TABLE 1. *Effect of different media on the growth (g/l)* of* Collybia Sp. Tricholoma Sp. *and* Oudemansiella canarii

| Media | Dry weight of mycelium (g/l) | | |
|---|---|---|---|
| | *Collybia Sp.* | *Tricholoma Sp.* | *Oudemansiella canarii* |
| Lutz | 2.312 | 3.476 | 1.956 |
| Kauffman | 9.285 | 7.120 | 1.920 |
| Complete mushroom | 11.382 | 9.994 | 4.964 |
| Glucose asparagine | 1.604 | 1.250 | 1.203 |
| White | 9.604 | 9.210 | 4.243 |
| Richard | — | — | — |

*Results are the mean of five replicates

—No growth

In order to find out the necessary incubation period for optimum growth, several Erlenmeyer flasks (250 ml) with 50 ml of optimum sterilized (at 10 p.s.i for 20 minutes) respective medium aseptically inoculated by respective test fungi and incubated at 30°C for five, ten, fifteen and twenty days. Other experimental procedures are same to those described earlier. The data obtained are present in the Table 2.

TABLE 2. *Effect of different incubation period on growth (g/l)* of* Coliybia Sp., Tricholoma Sp. *and* Oudemansiella canarii

| Species | Incubation period (days) | | | |
|---|---|---|---|---|
| | 5 | 10 | 15 | 20 |
| *Collybia Sp.* | 3.353 | 16.660 | 18.430 | 16 850 |
| *Tricholoma Sp.* | 2.973 | 10.730 | 12.730 | 14.830 |
| *Oudemansiella canarii* | 3.433 | 8.900 | 10.840 | 14.470 |

*Resuits are the average of three replicates.

The data in the Table 1, clearly indicate that the growth of the three fungi are not similar i. e. *Collybia Sp.* is fastest growing among the three. However all the three fungi failed to grow on Richard's medium. In case of all the three fungi Indian Complete mushroom medium has been found to be the best for growth which is followed by White, Kauffman, Lutz and Glucose-asparagine medium except *O. canarii* where Lutz medium slightly better than Kauffman medium.

From the data in Table 2, it is evident that optimum incubation period necessary for growth are not similar for the three fungi. In case of *Collybia Sp.* it is 15 days whereas it is 20 days for the rest two species.

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

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