

EFFECT OF DIFFERENT TEMPERATURE ON THE GROWTH OF
COLLYBIA SP., *TRICHOLOMA SP.* AND *OUDEMANSIELLA*
CANARI IN SUBMERGED CULTURE

Among the physical factors which influence the growth and metabolic activities of mushroom mycelia, temperature plays very important role. From the available literature it has been assumed that 25°C, 30°C or 35°C are the most favourable temperature for mycelial growth of the majority of the fungi.

The pileus tissue cultures of above mentioned species were used in the study and were maintained on complete mushroom agar medium which also was used as the basal synthetic liquid medium.

In order to find out a suitable temperature for optimum mycelial growth of these mushrooms the following experiment was done.

Erlenmeyer flask (250 ml) containing 50 ml of the basal synthetic medium (Yeast extract-2g, Peptone-2.5g, Malt extract-10g, Thiamine-100µg, Biotin-50µg, Folic acid-100 µg, Inositol-50mg, FeCl₃-10mg, CaCl₂ (0.1M)-5 ml, ZnSO₄-0.1mg, KH₂PO₄-0.25mg and distilled water-1 litre) was plugged and sterilized at 10 p. s. i for 20 minutes. Each flask was inoculated aseptically with a single inoculum disc (5 mm diameter) punched out aseptically from actively growing mycelium of the respective fungi. Several such flasks were inoculated in order to have three replicates for each treatment for each test fungus. The inoculated flasks were incubated (stationary) at 15°, 20°, 25°, 30° and 35°C (± 1°C)

Every five day, three flasks for each treatment for each test fungus were harvested and washed several times with distilled water to make it free from the adhering medium and dried at 60°C for 48 hours. The dried mycelia were kept in 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 Table 1.

From the table, it is evident that *Collybia Sp.* grows best at 30°C but the growth is minimum at lower temperature (15°C and 20°C). At 35°C the growth of *Collybia Sp.* slightly reduced in comparison to that of 30°C. According to Btodziak, (1980), the maximum growth is found at 35°C In case of *Lentinus edodes*. Fries (1956) reported that low and high temperature optimal growth in *Coprinus fimetarius* are 35°C and 40°C respectively. According to Jandaik et al (1975), *Pleurotus inquinaus*, *Pleurotus pistillaris* and *Pleurotus sajor-caju* show their best mycelial growth at 40°C, 35°C and 25°C respectively. *Tricholoma Sp.* and *Oudemansiella canarii* show their best mycelial growth

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

Temperature (°C)	Incubation Period (Days)											
	<i>Collybia</i> Sp.				<i>Tricholoma</i> Sp.				<i>Oudemansiella canarii</i>			
	5	10	15	20	5	10	15	20	5	10	15	20
15	3.128	9.300	10.220	9.660	3.510	4.640	4.720	4.863	2.520	4.200	4.860	5.306
20	3.340	16.660	18.110	21.040	2.973	16.560	16.730	17.830	3.438	8.900	14.840	19.470
25	4.516	17.400	21.266	20.200	4.690	8.940	9.600	9.746	3.430	6.060	9.350	12.320
30	7.300	21.500	23.480	22.340	6.940	8.930	7.910	6.930	2.270	7.400	7.280	11.508
35	3.520	23.190	22.790	22.640	7.450	9.610	7.900	6.675	—	—	—	—

*Data are the mean of three replicates.

—No growth.

at 20°C. *O. canarii* does not grow at 35°C. Litchfield *et al* (1963) showed that three species of *Morchella* grow best at 25°C. Jennison (1955) also reported that *Merulius americanus* grows best at 25°C.

So from the previous literature and experimental data given, it can be visualized that different mushrooms have different optimal temperature ranging from 20°C—40°C for their respective mycelial growth in the synthetic culture media.

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