

FORMATION OF BASIDIOCARP OF *LENTINUS* *PRAERIGIDUS* BERK. IN CULTURE

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Environmental conditions play a very important role in the development of sporophores in fungi. As such, any attempt to induce a wood-rotting fungus to fructify in culture is to be based mainly on the conditions under which the fungus grows abundantly in nature. The problem of production of typical sporophores in culture is further complicated since a single and standard method which may be applicable to all cases is yet to be worked out. From the available literatures, it appears that Badcock (1941, '43), Long and Harsch (1918), Bose (1929), Venkatarayan (1936), Banerjee *et al* (1955, '56) and a few others have made successful attempts in this field of research leaving still enough scope for further investigations.

In the present experiment, great difficulties were encountered in inducing *Lentinus praerigidus* to form normal fruit-bodies in culture. The different media and wood-block cultures showed negative results under a set of constant conditions inspite of sufficient vegetative growth in all cases and formation of 'anlagen' only in case of potato-dextrose-agar. An attempt was, therefore, made by changing the environmental conditions. As small, abortive 'anlagen' were formed only in case of potato-dextrose-agar, this medium was selected for the purpose.

About 60 c. cm. of the medium (pH 6.5) was taken in each Petri-dish (100 c. cm. in diam.). Several such Petri-dishes were inoculated separately with typical dikaryotic mycelium and the isolate of the test-fungus. These were kept in an inverted position at 30°C. in complete darkness inside an incubator. In about ten days, the aerial mat after covering the entire surface of, the inner lid of the Petri-dish reached its edge forming felt-like masses at places in the space between it and the outer lid. At this stage, the Petri-dishes were taken out of the incubator, the upper lids were removed and kept with cultures upwards inside moist bell-jars under laboratory conditions of temperatures (28°-32° C.) and diffused light. Within next forty-eight hours, the fundaments ('anlagen') made their appearance at the edges, in the form of minute, white, intertwined mycelial masses which were either convex or somewhat elongated in form (0.5-1 mm. high). No further development was, however, noticed.

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In some Petri-dishes kept inside the incubator, several 'anagen' were formed in the space between the two lids and these later developed into compressed young fruit-bodies showing various stages of development. When each 'anagen' was about 0.5 mm. high, it became somewhat pointed at the apex with distinct brownish colouration. On further development, each formed a minute pileus (about 3 mm. in diam.) with Hazel scales and rudimentary gills on the lower surface. The stipe (2.5-3 x 1 mm.) showed somewhat olive colouration. In this condition the development of the fruit-bodies were found to be checked. Some Petri-dishes, at this stage, were again taken out and the lower lids with rudimentary pilei attached to their rims were kept in an inclined position on the upper lids containing moist absorbent cotton. These were then placed under moist bell-jars under similar conditions of light and temperature. Within next forty-eight hours, a few more 'anagen' made their appearance while the previous ones showed very little change excepting in that the gills became more prominent. Further development of the fruit-bodies was, however, inhibited probably due to insufficient supply of moisture.

In another experiment, a set of inoculated Petri-dishes kept under identical conditions within the incubator, distinctly white fundaments of fruit-bodies made their appearance within a fortnight in the usual manner. At this stage, the inner lid of each Petri-dish was slightly raised by putting glass-blocks in such a way as to keep the fundaments at the same level with that of the rim of the outer lid in order to avoid their friction with the outer lid. Within next twenty-four hours, 6-8 fundaments began to elongate and appeared somewhat olive in colour. These fundaments (2-3 x 1.5-2 mm.) were more or less cylindrical towards the base and narrowed at the apex. The Petri-dish was then taken out of the incubator, a thick pad of moist, absorbent cotton was placed in the upper lid but in contact with the young fruit-bodies and kept inside a moist bell-jar under identical laboratory conditions of temperature and light. In next twenty-four hours, the fruit-bodies elongated considerably, each being differentiated into a distinct, more or less cylindrical type (10-12 x 2.5-3 mm. in diam.) with rudimentary gills on its lower side. In some cases, the stipe was slightly swollen towards the base. On examination with a pocket lens, the upper surface of the pileus and the entire surface of the stipe appeared somewhat pubescent. The stipe and the pileus were concolourous being Moon-mist or Flax. Within next twenty-four hours, further development took place and out of eight rudimentary fruit-bodies, four did not develop, while the remaining four showed various stages of development. Of these one took the lead and formed a somewhat excentrically stipitate, well-developed fructification with an irregularly saucers shaped pileus and a stout cylindrical stipe (Figs. 1 & 2). The upper surface of the pileus (15 mm. in diam.) showed Maple to Gold Brown at the periphery while Flax to Old Ivory at the centre and was covered with brownish to Hazel scales which were more abundant near the periphery. The margin was fringed due to presence of hairs. The stipe

(18×3-6 mm.) was covered throughout with coarse hairs and was Hazel to Rew-sienna at the junction of the stipe and the gills, Maple at the Middle and Tonquet at the base. The decurrent gills were at first Honey Middle Stone but turned Bronze Brown with age. Of the two other fruit-bodies, one developed a smaller pileus and the other a comparatively larger laterally stipitate one with identical characters. The fourth fruit-body did not form any well-developed pileus and the growth appeared to be checked.

No further development, however, was noticed within next forty-eight hours. At this stage, a portion of the fruit-body was cut out from which copious spore-deposits were obtained on agar plates. From these spores, polysporous cultures were made which showed identical characters with those of the isolates and typical dikaryotic mycelia of the fungus.

Sections through gills reveal the presence of well-developed hymenium with basidia and basidiospores and their measurements agree closely to those obtained from fruit-bodies in nature.

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EXPLANATION OF PLATE

Fig. 1. Photograph showing the upper surface of the basidiocarp of *L. Praerigidus* in culture.

Fig. 2. Photograph showing the lower surface of the basidiocarp of *L. Praerigidus* in culture.