TRAMETES CINGULATA BERK. IN CULTURE

BY SACHINDRANATH BANERJEE AND PRITINDRA MOHAN NAHA

(Mycological Laboratory, Department of Botany, Calcutta University)

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INTRODUCTION

Among the Hymenomycetes, causing the decay of woods in our forests, the Polyporaceae probably cause the greatest amount of damage. In order to control the inroads of these fungi, it is essential that we should have considerable knowledge regarding their biology. Considerable amount of work in this line has already been done in our country, but there are still many of them about which very little is known. Trametes cingulata Berk. is one of them. It is a common saprophyte that attacks our structural timber. It grows abundantly on logs and stumps of Shorea robusta Gaertn. f., so common in the timber-yards of Calcutta and suburbs. It also attacks some hardwood species and monocotyledons, such as Grevillea robusta, Ficus benghalensis, Cocos nucifera and Bambusa arundinacea. Though Bose (1919, 1930, 1937) has reported it from Bengal as a saprophyte on dead branches, prostrate trunks, logs, timber, etc., and also studied certain aspects of its biology, yet very little work has been done so far regarding its responses in culture to variations of environmental factors. The present investigation has therefore been undertaken concerning the influence of a number of contributory factors upon the growth of this organism and the results are presented in the following pages.

SOURCE OF MATERIAL

The cultures of Trametes cingulata Berk. were made from the spores of the sporophores according to the technique followed by Banerjee (1955). A small rectangular portion (10 × 10 mm.) of a freshly collected fruit body was fixed eccentrically with its hymenial surface downwards to the inner side of the upper lid of a sterile Petri dish containing 2.5% sterile cleared agar. Care was taken so that the hymenial surface did not touch the agar while the upper lid of the Petri dish was placed in position. It was then kept at a room temperature of 30°C within a bell-jar lined inside with moist blotting-paper. Within a couple of hours spore-deposit was obtained on the surface of 2.5% sterile cleared agar in a Petri dish from which several polysporous
cultures were made by transferring loopfuls of spores aseptically to 2.5% malt agar slants. These were kept in the laboratory under identical environmental conditions and within a week a good mycelial growth was obtained in all the tubes. These were kept as stock cultures for study and comparison. All the cultures showed the presence of clamp-connexions and therefore obviously in the second stage of development. All experiments on the cultural characteristics of *Trametes cingulata* have been carried out from cultures obtained from this source.

**Fungus in Culture**

*Spore-germination* (Text-Fig. 1)

On 2.5% agar medium germination occurred within 10 to 12 hours after planting the spores. The agar plates after spore-shed were placed within a moist chamber in the diffused light of the laboratory and at room temperature (30°C). This condition seemed quite favourable for the germination of the spores. More than 95% of the spores germinated easily in the above way. Since no difficulty was experienced in getting germination of spores, other methods were not tried for studying the same. Germination started with swelling of the spores to about twice their normal size and subsequent formation of a simple germ-tube (Text-Fig. 1). Usually the germ-tube appeared at the apex of the spore, but sometimes it may also develop from its sides. The germ-tube develops directly into the primary mycelium which is characterised by the absence of clamp-connexions, and by comparatively narrow (2.5μ wide) hyphae.

*Oxidase test*

*Trametes cingulata* is a 'white rot' fungus. This was determined after performing the oxidase tests. The oxidase test, as described by Bavendamm (1928), was done by growing the test fungus on malt agar medium containing 0.5% gallic acid or tannic acid in sterile Petri dishes. Fungus causing 'white rot' forms dark discoloured area around the inoculum and is thus considered as positive reactors, while a fungus causing 'brown rot' does not form dark discoloured area. It is thus negative in reaction. As decomposition of lignin is, according to Wehmer (1927), an oxidative process, the secretion of oxidase by a 'white rot' fungus is naturally expected.

The secondary mycelium of *Trametes cingulata* was grown on a 0.5% *malt-agar* medium in sterile Petri dishes (90 mm. in diameter) containing the requisite quantity of tannic acid or gallic acid. In both the cases, dark brown zones appeared due to the presence of oxidase within 36 hours after inoculation. It was observed that the intensity of reaction was somewhat greater