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Two new wood-decaying basidiomycetous fungi from India

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A survey of wood-decaying fungi on living trees and timbers has been carried out from Allahabad and adjoining areas during 2000-2004. Fifteen species of wood-decaying basidiomycetes belonging to two orders and five families of the sub-division Basidiomycotina are the main biodegrading agents of wood. Out of the fifteen collected basidiomycetous fungi, ***Polyporus giganteus*** and ***Polyporus tsugae*** are being reported here for the first time from India.

Key words: Two new reports taxonomy of wood-decay fungi, white-rot, brown-rot.

INTRODUCTION

The wood decaying fungi may grow on trees (living as well as dead), logs, wood or timer in use, and untreated or treated with preservative. Macro-fungi exhibit pattern of diversity that are related largely to substratum, host availability, and climatic factors such as rainfall, temperature and humidity. But fungi particularly the members of Polyporaceae only can cause depreciating value of wood decay. The decay of timber both living as well as dead is caused by biochemical activities of a single or a group of fungi, by which sound wood is decomposed.

The aim of the present investigation was to make a floristic survey on the occurrence of the wood-decaying fungi of Allahabad, Uttar Pradesh, as no such survey had been carried out earlier in this region.

MATERIALS AND METHODS

The materials used during the survey were a pocket lens (10X), a pair of scissors, forceps, a good knife, a wood chisel, polythene bags of various sizes, containers (small and big boxes), labels, a pencil, an ordinary camera, preservative and a note book.

Three routes were chosen for the collection in and around Allahabad i.e., University of Allahabad, Company garden including Allahabad Museum and Chandra Shekhar Azad Park, and a village (Pahari ka Pura) 11 Km. away from the Sangam, rich in mango orchard. During monsoon period, these site were inspected for five consecutive years (2000-2004).

Emphasis was given to collect the mature and well developed sporophores and hence, repeated field trips were undertaken at regular intervals of 10 to 15 days. Four to six samples were collected against each field number except a few rare and scarce ones. Weathered and insect eatern specimens were discarded. Specimens were removed from the substratum by excavating around the base of the stipe to reveal attachment to the substratum.

The important criteria considered during the collection of the specimens were colour, size, manner of growth, place of growth, texture, smell, ecological adaptation etc. and other ephemeral characters which could not be observed in dried or preserved specimens. All the collections were placed in different sizes of plastic bags, with labels for each collection.

Identification of the specimens was made according to their specific characters described by Overholts (1953), Fergus (1960), Kleijn (1962), Bakshi (1971), and Svrcek (1988). The taxonomic treatments for the species names have been done according to the International Code for Botanical Nomenclature (ICBN).

RESULTS AND DISCUSSION

Wood-decaying basidiomycetes were widespread throughout all the sites selected for survey occurring mainly on broad-leaved hosts. Fifteen species of wood-decay fungi belonging to ten genera had been identified and recorded. All are new records from Allahabad and two are new from India (Bilgrami *et al.,* 1979; 1991; Jamaluddin *et al.,* 2004). The descriptions of these two species are as follows :

Gunus *Polyporus* (Mich.) Fr. ex Fr. Basidio., Polyporaceae

Polyporus giganteus Pers. ex Fries

Sporophore stipitate, compound, 15-35 cm broad, composed of a number (1-3) broad, fleshy—tough, pillei, 6-15 cm in diameter and 0.6-0.9 cm in thickness (Fig. 1), dimidiate (semi circular) to flabelliform (fan-shaped) becoming brown when dried. The margin thin and acute, involute (curved inside) on drying; context brown 1-6 mm thick; pore surface white, blackish on drying, the tubes 1-3 mm long, mouths angular averaging 4-6 per mm., stem short and thick; basidiospores ovoid to subglobose (slightly spherical) with a very small apicules, smooth, hyaline 5.4 × 6.75μm in diameter; hyphae, simple, thin-walled, 4-6μm broad.

The fungus was collected from the stump of an unidentified tree and description was based on specimen No. MMSC VII.

Polyporus tsugae (Murr.) Overh.

Sporophore stipitate by a narrowed base, pileus soft corky when fresh, rigid and corky when dry, flabelliform, 5-16 cm in length, 6-12 cm broad, and 1-4 cm in thickness with a mahogany-coloured, shining, incrusted surface (Figs. 2 & 3), paler at margin when growing, context, brown, 0.3-2.0 cm thick, tough, pore surface white to brown, discolouring on handling when fresh, the tubes, pore surface white to brown, discolouring on handling when fresh, the tubes 0.3-1.0 cm long, the mouths thick walled, entire, averaging 4-5 per mm; stem lateral, concolorous to the pileus, 3-4 cm long and 1-2 cm thick; basidiospores ovoid with a truncate apex, apparently echinuclate the outer wall pale, inner light brown, 9.5-10.8 × 7.1 μm; hyphae hyaline to pale brown, branched, 6-9 μm broad.

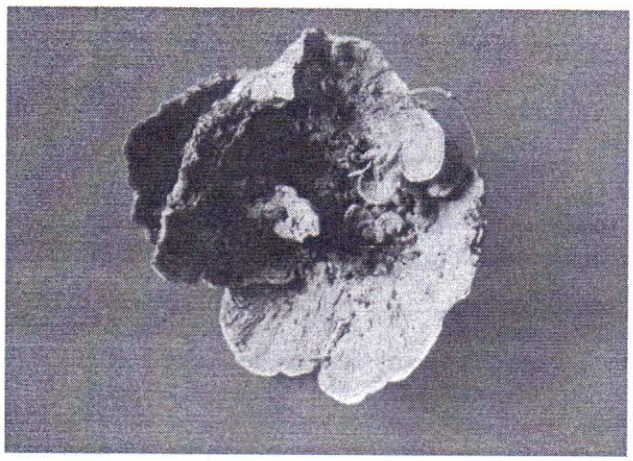

Fig. 1 : *Polyporus giganteus,* × 0.25
Upper surface view of the specimen

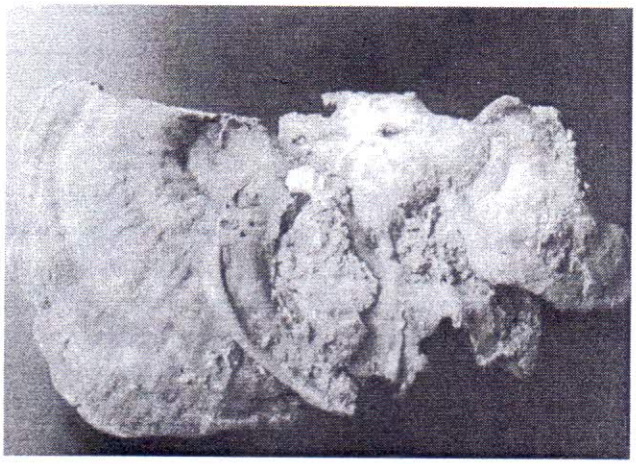

Fig. 2 : *Polyporus tsugae,* × 0.5
Upper surface view of the specimen

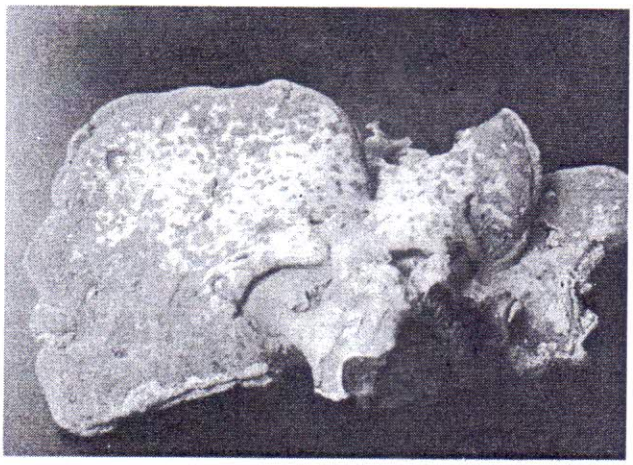

Fig. 3 : *Polyporus tsugae,* × 0.5
Lower surface veiw of the specimen

The fungus was collected from the base of stem of *Ficus religiosa* and description was based on specimen No. MMSC VIII.

The specimens were deposited in Mitter Mycology Lab of Botany Department, University of Allahabad.

These forms were uncommon and found to be associated only with few substrata, and collected only in the year 2000 and were not found in the following years. It has also been observed during this study that decay progresses more quickly and is more severe on older and decaying trees.

The problem of wood-decaying fungi is World-wide but it is more in those areas where climatic conditions are more conductive for their growth. The hot and humid climate of Allahabad offers excellent conditions for the growth of fungi particularly during the monsoon season.

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