



DIVERSITY AND HOST SUSCEPTIBILITY OF *Phellinus badius* TO CENTRAL INDIAN TREES

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ABSTRACT: In the present investigation four states of central India, Chhattisgarh, Madhya Pradesh, Maharashtra and Odisha were surveyed to collect specimens of *Phellinus badius*, a fungus belonging to order Hymenochaetales, causing heart rot and hollowness in trees. Total 30 specimens of *Phellinus badius* were collected by our group causing heart rot in different trees. The fungus is reported on 27 hosts representing 14 families and 22 genera from central India are documented. Tree species belonging to family Leguminosae (including Fabaceae, Caesalpinnaceae and Mimosaceae) are more susceptible to *Phellinus badius*. Amongst them genus *Acacia* is the most susceptible. The fungus is reported for the first time on 8 trees namely, *Anogeissus latifolia*, *Azadirachta indica*, *Butea monosperma*, *Eugenia heynianum*, *Madhuca indica*, *Mimosaops elengi*, *Pithecellobium dulce*, *Shorea robusta* and constitutes new host records from India.

Keyword: Aphyllorphorales, forest degradation, new host records, *Phellinus* diversity, perthophytic, wood decay fungi

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Wood is composed of the structural polymer cellulose, lignin and hemicellulose. However,

there is considerable variation, the heartwood of living trees in which a wide array of non-structural extraneous materials are deposited, as the maturing cells die. Fungal species decay heartwood and causes white rot of live standing trees and dead logs of angiospermic (Ranadive et al. 2012). The Aphyllorphorales is an obsolete order of fungi in the Basidiomycota and it is entirely artificial, having miscellany of species now grouped in the clavarioid, corticioid, cyphelloid, hydroid and poroid fungi. As originally conceived, the Aphyllorphorales contained the families Clavariaceae, Cyphellaceae, Fistulinaceae, Hydnaceae, Meruliaceae, Polyporaceae, Polystictaceae, and Thelephoraceae. Most of these families are still currently used, albeit in an amended form (Kirk et al., 2008). Though many attempts were made to create a more natural classification of the Basidiomycota, the Aphyllorphorales is still continued to be used. Species previously placed in Aphyllorphorales play a major role in wood decay, resulting serious damage to the forest economy of our country. All fungi of this order are lignicolous and grow on bark and wood and also cause white rot, where lignin and cellulose is degraded (Ranadive et al. 2013). *Phellinus* is one of the largest genera with more than 350 species currently placed in family Hymenochaetaceae. Taxonomic studies of the genus *Phellinus* had been extensively done throughout

the world (Bondarzew and Singer, 1941; Cunningham, 1965; Donk, 1954, 1056ab; 1957, 1958, 1960, 1964; Gilbertson and Ryvarden, 1987; Overholts, 1929; Lowe, 1957; Rajchenberg, 1987a,b; Ryvarden, 1987)

Phellinus badius produced different organic chemical including drosophilin, a methyl ether (tetrachloro-1, 4-dimethoxybenzene), in the heartwood of *Prosopis juliflora* (Anchel, 1952; Field et al., 1995; Garvie et al., 2015; Hsu et al., 1971). Medicinal species of *Phellinus*, sensu lato produced metabolites were reported (Dai et al., 2010; Meera and Janardhanan, 2012). *Phellinus linteus*, a medicinal mushroom was also screened for anti-viral activity (Lee D et al., 2011).

In India *Phellinus* spp. was extensively studied (Bagchee, 1961; Bakshi, 1955; 1958; Thind and Dhanda, 1980; Ganesh and Leelavathy, 1986; Vaidya and Rabba, 1993a,b; Verma et al., 2008; 2011; Tiwari et al., 2013). Till date 47 species have already been reported from India (Rabba, 1994) and 18 species from central India (Tiwari et al., 2013).

The present study reports diversity and host specificity of *Phellinus badius* in central India. It also reports 8 new host records of this fungus from India.

MATERIAL AND METHODS

Collection of samples

The samples were collected from central India (Chhattisgarh, Madhya Pradesh, Maharashtra and Odisha). The specimen were deposited in the mycology