



Notes on wood rotting fungi from India (1): *Trametes versicolor* - The Turkey Tail

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ABSTRACT

Wood decaying fungi possess considerable ability to decompose lignified cells of coarse woody materials using enzymatic and non-enzymatic reactions. These fungi also cause serious damage to roots and standing tree trunks and finally destroying the mechanical strength of wood. The present paper is the first of this series describing wood rotting fungus i.e. *Trametes versicolor* (L.) Lloyd. The information is provided with illustrations, description and notes on symptoms. *T. versicolor*, a colorful cap shaped white-rot basidiomycete, found throughout temperate and subtropical zones of all continents to infect and infest a variety of species in nearly all hardwood tree genera and many conifer species. Caps are sessile normally 1.6 - 6.8 cm wide and 1-3mm in thickness, grows singly, sometimes overlapping either in a row or a rosette, with multicolored concentric zoning on the upper surface. Hyphae are trimitic: generative hyphae are thin-walled with clamps, 1.5-2.5 μ m in diameter; skeletal hyphae thick-walled, nonseptate, 3.0 - 4.0 μ m in diameter; binding hyphae are also thick-walled, nonseptate, heavily branched, 1.5 - 2.0 μ m in diameter.

Key Words: Wood rotting fungi, *Trametes versicolor*, taxonomy, notes, India

INTRODUCTION

Wood decaying fungi play important role in ecological nutrient cycling due to their ability to decompose lignified cells of coarse woody materials using enzymatic and non-enzymatic reactions (Cui *et al.* 2006). Although, the major use of these fungi in pulp and paper industry is based on this approach but, they also cause serious damage to roots and standing tree trunks through posing urban environmental stresses i.e. general weakening of the tree defense system to frequent injuries on branches and roots, allowing the wood-rotting agents to gain entry through wounds and making serious loss of wood mechanical strength finally (Lonsdale 1999).

The present paper describes important wood rotting fungi with illustrations and description along with notes on symptoms. *Trametes versicolor* (L.) Lloyd is described as the first wood rotting fungi in this series.

DESCRIPTION OF THE HOST - PATHOGEN INTERACTION

The hosts

Trametes versicolor can be found throughout all temperate and most subtropical zones on all continents to infect and infest a variety of plant species in nearly all hardwood tree genera and many conifer species. The fungus is commonly collected on standing dead or fallen hardwood trees. The major known hosts in India are; species of *Acacia*, *Quercus*, *Prunus*, *Abies*, *Pinus* sp. and many more standing dead or fallen hardwood trees. Along with other species, *Trametes versicolor* is a prime wood decomposer, causing strong white rot in the colonized wood.

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Fig. 1. *Trametes versicolor* (L.) Lloyd - upper and lower surfaces of the fungus

The Pathogen

Taxonomical details

***Trametes versicolor* (L.) Lloyd 1920**
Mycological Writings, 6: 1029-1101

Basionym: *Boletus versicolor* L. 1753

Synonyms:

Boletus versicolor L.
Coriolus azureus (Fr.) G. Cunn.
Coriolus versicolor (L.) Quel.
Polyporus versicolor (L.) Fr.
Polystictus azureus Fr.
Polystictus versicolor (L.) Fr.
Trametes azurea (Fr.) G. Cunn.
Trametes versicolor (L.) Pilat.

Trametes versicolor a colorful bracket fungus, now known as Turkey Tail (Roger 2006). It is one of the most competent wood-degrading white-rot fungi of class Agaricomycetes of the division Basidiomycota. It belongs to Polyporales order and family Polyporaceae. Due to the ability of *T. versicolor*

to degrade lignocelluloses (Tanaka *et al.* 1999; Collin & Dobson 1997), the fungus produces and secretes cellobiose dehydrogenase, laccase, manganese peroxidases and lignin peroxidases (Dumoncaux 1998; Paice 1993; Dodson 1987; Johansson *et al* 2002).

Trametes versicolor (L.) Lloyd is a common polypore mushroom cosmopolitan in distribution. It appeared as cap or fan shaped usually 1.6 - 6.8 cm wide with fuzzy or velvety appearance. Caps are sessile normally 1 - 3mm in thickness, grows singly, sometimes overlapping either in a row or a rosette, flat to wavy and with multicolored concentric zoning on the upper surface (Fig. 1). Pores bearing side is whitish in colour. Spores are 3 - 4.5 × 1.5-2 µm in size; cylindrical to sausage-shaped; smooth; hyaline. Basidiospores and fusoid cystidioles are also present. Hyphae are trimitic; generative hyphae are thin-walled with clamps, 1.5 - 2.5 µm in diameter; skeletal hyphae thick-walled, nonseptate, 3.0 - 4.0 µm in diameter; binding hyphae are also thick-walled, nonseptate, heavily branched, 1.5 - 2.0 µm in diameter (Fig. 2).

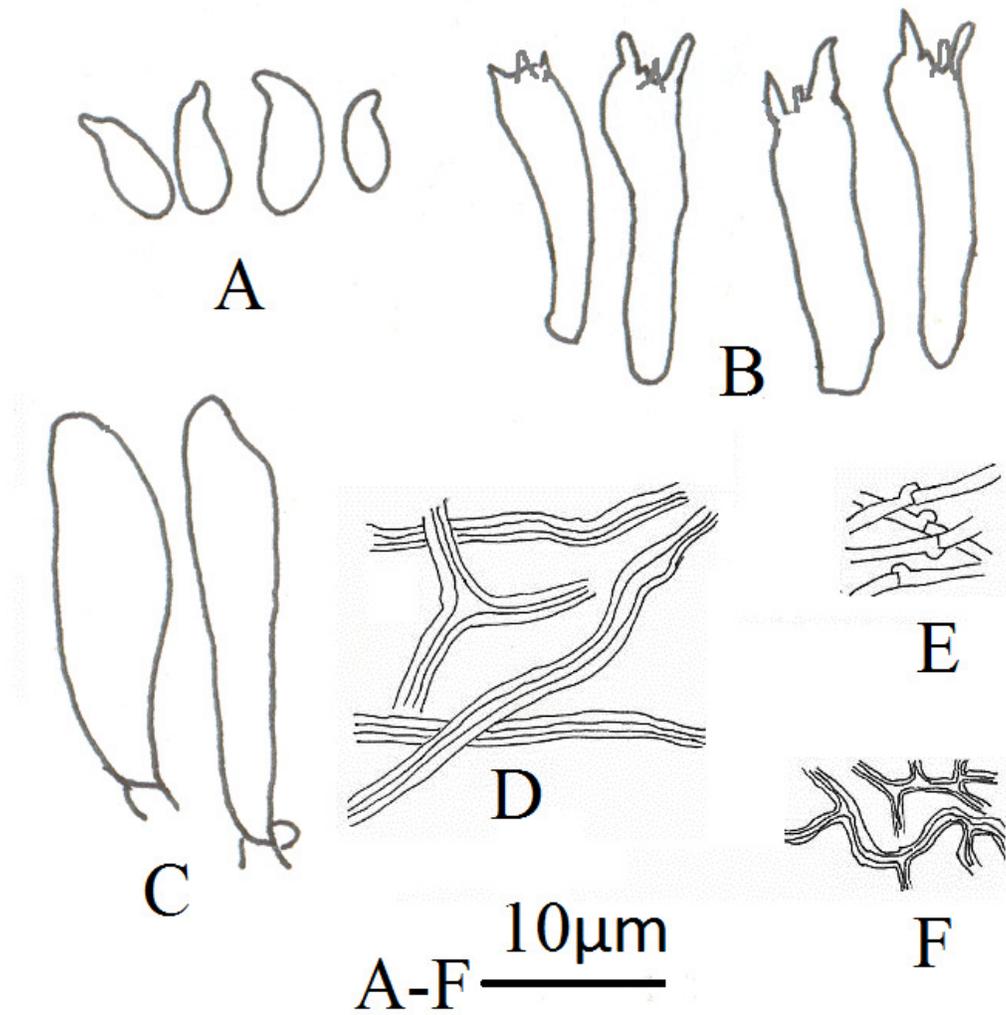


Fig. 2. A-F- *Trametes versicolor* (L.) Lloyd. A — Basidiospores, B — Basidia, C — Fusoid cystidioles, D — Skeletal hyphae, E — Binding hyphae, F — Generative hyphae

CONCLUSION

Trametes versicolor, a white rot basidiomycete, grows on tree trunks and can be found all over the world in different climates. The fungus is known to infect and infest species in nearly all hardwood tree genera, and many conifer species are also hosts of this fungus. The extensive host range of *T. versicolor* makes it a fungus of industrial interest. Many scientific studies evaluated the wood degradation capacity of present fungus and reported that *T. versicolor* can cause the simultaneous degradation of lignin, cellulose, and hemicelluloses. Additionally, it has a long history of use in Asia as medicine (Standish *et al.* 2008), which boosts the research interest of scientific community in this fungus to explore it as bio-agent for the treatment of textile industries effluents and for medicinal approach.

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