
Antagonistic effect of *Streptomyces griseus* on the mycelial growth of *Phellinus gilvus*

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Streptomyces griseus shows antagonistic effect on the mycelial growth of *Phellinus gilvus*, a serious wood-rotting fungus of India, in Petri dish containing 1.25% malt agar medium.

Key words : *Streptomyces griseus*, *Phellinus gilvus*, antagonistic effect

INTRODUCTION

In the realm of forestry, there are very few reports of applying the antagonism phenomenon (which exists between certain microorganisms) to the control of diseases of trees caused by fungi. Beech and oak wood blocks soaked in liquid cultures of a *Bacillus* sp. showed retarded growth of *Lenzites (Daedalea) quercina* (Karstic, 1951). It has also been found that prior application of *Bacillus subtilis* inhibit canker disease caused by *Nectria galligena* (Swinburne, 1973). *Phellinus gilvus* is a serious wood-rotting fungus in India and it causes white rot of many economically important hardwood plants like *Albizia lebbek*, *Dalbergia sissoo* and *Shorea robusta*. In the present investigation different bacteria like *Bacillus subtilis*, *Streptomyces griseus* and *Streptomyces griseochromogenes* are tested against *Phellinus gilvus* to see if any of them have antagonistic effect on this fungus which can be effectively used to check its growth and the rot caused by it.

MATERIALS AND METHODS

Polysporus culture of *Phellinus gilvus* was isolated from spore deposits of a freshly collected sporophore. Each bacterium was inoculated on 1.25% malt agar medium near the centre of each Petri dish. Single fungal inoculum of 6 mm diameter was placed in each Petri dish on either side of the bacterial streak but at a considerable distance from the bacterial streak. The control plates were inoculated by fungus only. All the Petri dishes were then incubated at room temperature ($28\pm 2^\circ\text{C}$) in complete darkness. The Petri dishes were checked up to eight weeks at regular intervals. The activity of each bacterium was assessed depending upon the extent of growth inhibition.

RESULTS AND DISCUSSION

Of the three bacteria tested, only *S. griseus* was found to inhibit the growth of *P. gilvus* (Fig. 1). *S. griseus* produced antibiotics like streptomycin, cyclohexamide and antimycin which are active against some fungi (Cheo, 1968; Muller *et al.*, 1954). In the present

investigation the isolation and characterisation of the active principle of *S. griseus* has not been possible but the extracellular metabolites produced by *S. griseus* caused growth retardation and various type of deformities of hyphae including curling, irregular swelling and anastomosis. The present observation, therefore, indicates that *S. griseus* can be effectively used for the control of wood decay caused by *P. gilvus*.

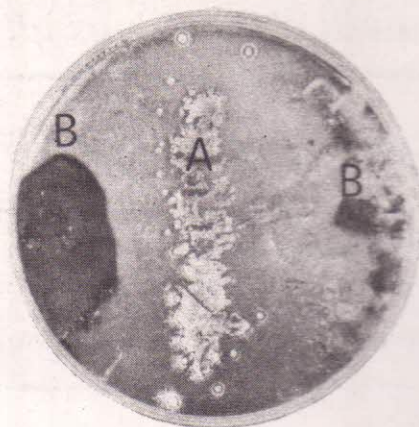


Fig. 1. Antagonistic effect of *Streptomyces griseus* (A) on the mycelial growth of *Phellinus gilvus* (B) in Petri dish containing 1.25% malt agar medium.

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