

**PRODUCTION OF TOXIC METABOLITES BY  
ANTAGONISTIC *Trichoderma* spp. AGAINST WHITE  
ROOT DISEASE OF RUBBER**

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by

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## ABSTRACT

*Trichoderma* is one of the most studied and applied fungal biocontrol agents. *Trichoderma* species suppress pathogens by using a variety of mechanisms such as antibiosis, direct mycoparasitism and competition for space, nutrients and enzyme substrates. White root disease is a serious root disease caused by *Rigidoporus microporus* which is spreading fast in rubber plantations of Sri Lanka. In this study a laboratory experiment was carried out to identify whether *Trichoderma* produce or not toxic metabolites to suppress *Rigidoporus microporus*. *Trichoderma* strain 01 with *Rigidoporus microporus* and *Trichoderma* strain 02 with *Rigidoporus microporus* were inoculated into separate Potato Dextrose Broth medium. After 12 days of incubation period culture filtrates were taken with sterile 0.22 micron filter paper. Five concentrations 15%, 30%, 45%, 60% and 75% (v/v) of the culture filtrates were tested using the Poison Food Technique on *Rigidoporus microporus* with three replicates. There was a significant interaction between *Trichoderma* spp. and concentration of the culture filtrates ( $p < 0.05$ ). It showed the highest mean percentage growth inhibition by both strains at 75% concentration and the lowest mean percentage growth inhibition at 15% concentration. The mean percentage of growth inhibition at 75% concentration of *Trichoderma* strain 01 was 71.39% and *Trichoderma* strain 02 was 71.45%. The mean percentage of growth inhibition at 15% concentration of *Trichoderma* strain 01 was 41.89% and *Trichoderma* strain 02 was 13.32%. The culture filtrates amended PDA were autoclaved before the inoculation of the pathogen and the results indicated that *Trichoderma* strain 01 and *Trichoderma* strain 02 produce a thermo stable toxic substance (secondary metabolites) to inhibit white root disease causative pathogen *Rigidoporus microporus*. Higher the concentration of the secondary metabolites, greater was the growth inhibition of the pathogen *Rigidoporus microporus*.

Key words: *Trichoderma*, Biocontrol, Secondary metabolites, *Rigidoporus microporus*, Inhibitory effects