

ANTAGONISTIC EFFECTS OF TRICHODERMA BIO-CONTROL AGENT AGAINST MAJOR ROOT PATHOGENS OF TEA

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The use of biological agents in plant protection is becoming an alternative to chemicals against insects, pathogens and weeds. Chemicals result in accumulation of harmful residues, both in the product as well as in the environment, leading to serious ecological and health issues. Success of the biological control methods depends on the antagonistic effects of biological agents against pathogens. *Trichoderma* spp., are common filamentous imperfect fungi and have antagonistic ability against plant pathogens. This study investigated antagonistic effects of *T. harzianum* against major root pathogens, *Poria hypolateritia* (red root disease), *Rosellinia arcuata* (black root disease) and *Rigidiporus microporus* (white root disease) of Tea (*Camellia sinensis* L.). *T. harzianum* directly inhibited all the fungal pathogens tested. In dual cultures, after eight days of incubation, 98.88%, 97%, 87.27% mycelial inhibition was observed in *R. arcuata*, *P. hypolateritia* and *R. microporus*, respectively. Coil formation and attenuated lysis of mycelia were observed in slide cultures. Antibiosis, ability to produce inhibitory metabolic compounds by *T. harzianum* was observed. Based on colony morphology, maximum average inhibition by volatile compounds after five days of incubation was 49.52%, 23.56% and 39.89% in *R. arcuata*, *P. hypolateritia*, and *R. microporus*, respectively. The highest average mycelial inhibition by diffusible compounds in culture filtrate was at 10% concentration, resulting 21.31% inhibition in *R. arcuata*, 48.39% in *P. hypolateritia* and 26.02% in *R. microporus*. This information revealed the antagonistic effects of *T. harzianum* to suppress major root pathogens of tea. The degree of antagonism by different mechanisms varied among different root pathogens. This study shows the possibility of using mycoparasitism against three major pathogens invading roots of tea plants.

Keywords: Antibiosis, Biological agents, Mycelial inhibition, Mycoparasitism