

Biocontrol Effects of *Trichoderma* Species on *Alternaria alternata* keissl. , The Causal Agent of Tomato Target Spot Under *In Vitro* conditions

Ahmad Reza Ahmadi , Saeed Rezaei , Hamid Reza Zamanizadeh
Department of plant pathology, Science and Research branch, Islamic Azad University, Tehran, Iran.
ar.ahmadi2653@gmail.com

INTRODUCTION :

Alternaria target spot is one of the important diseases of tomato (*Solanum lycopersicum*) leading to substantial yield losses worldwide. The genus *Trichoderma* comprises a great number of fungal isolates that act as biological control agents, the antagonistic properties of which are based on the activation of multiple mechanisms. *Trichoderma* strains exert biocontrol against fungal phytopathogens either indirectly, by competing for nutrients and space, modifying the environmental conditions, promoting plant growth and plant defensive mechanisms, antibiosis, or directly, by mechanisms such as mycoparasitism.

MATERIALS AND METHODS:

The fungus pathogen, *Alternaria alternata* keissl. was isolated from transitional part between healthy tissue and brown spots on tomato leaves. The fungus was maintained on Potato Dextrose Agar (PDA) at 25 °C. In this study biocontrol activities of 4 species of *Trichoderma* against *A. alternata* has been evaluated. A dual culture test on the potato dextrose agar was conducted *in vitro* to assay the ability of biocontrol agents viz, *T. koningii* *T. brevicompactum* *T. harzianum* *T. virens* to inhibit growth of *Alternaria* pathogen. All treatments were carried out in triplicate. They were incubated at 25 °C and the diameter of the colonies was measured after 10 days. The biocontrol activity was assessed as the percentage of mycelial growth inhibition according to Edington et al., (1971). as follows :
Percentage of mycelial growth inhibition = [(dc-dt)/dc × 100]. where dc = average diameter of fungal colony in control and dt denotes the average diameter of fungal colony in treatment.

RESULTS AND DISCUSSION :

All of four species of *Trichoderma* inhibited the growth of the fungus pathogen. among them *T. koningii* and *T. brevicompactum* had more inhibition effect on *Alternaria*. In dual culture test *T. koningii* caused maximum inhibition of radial growth of *Alternaria* (77%) followed by *T. brevicompactum* (73%). The strong reducing effect of these species towards *Alternaria* can be applied in biological control of this pathogen .

Keywords : *Alternaria*, Biocontrol, *Trichoderma*, Tomato