

Mycelial growth rate and mycoparasitic potential of *Trichoderma harzianum* isolates against *Fusarium oxysporum* from grapevine

*Csilla Kovács; Erzsébet Sándor; Ferenc Peles

University of Debrecen, Faculty of Agricultural and Food Sciences and Environmental Management, Institute of Food Science

Böszörményi Street 138., H-4032 Debrecen, Hungary

Trichoderma harzianum is mycoparasite with antagonistic and mycotoxic metabolite production properties. *Trichoderma* species can be used as biopesticides against pathogenic fungi. Currently there is no effective fungicide against *Fusarium oxysporum* in grapevine trunk; therefore our aim was to find potential biopesticide against it.

Eight mycoparasitic *Trichoderma harzianum* isolates (TR01-TR05; TR07; TR09; TR10) were tested in vitro to examine their mycelial growth rate. Those were isolated from grapevine trunk disease (GTD) asymptomatic grapevine trunks from the Tokaj wine region, Hungary. The average linear growth rate (ALG) of the isolates was tested at five different temperatures (18.5-37°C). The mycoparasitic ability of the *Trichoderma* isolates against *Fusarium oxysporum* isolated from GTD symptomatic plants was also determined. 5 mm mycelial disks from the margin of seven days old colonies were cut, and put in 3 cm distance on PDA plates, than incubated at room temperature for 6 days. Finally growth inhibition value was calculated to express the mycoparasitic potential.

Significant difference was found between the mycelial growth of the isolates. TR03 and TR08 isolates had significant lower growth rate, than the other *Trichoderma* isolates. The TR07, TR09 and TR10 isolates grew rapidly in all examined temperatures.

The interaction between *Trichoderma harzianum* and *Fusarium oxysporum* f. sp. *ciceris* showed different inhibition ratio on the fourth and sixth day. The TR08 - *F. oxysporum* had the highest inhibition zone (4 day: 63.6%; 6. day: 82.6%), while TR10 - *Fusarium oxysporum* had the lowest one (4. day: 40.9%; 6. day: 47.3%). The TR09 isolate showed low (<50%) inhibition zone at the examined days, while TR07, the most intensively growing isolate also had high (> 50%) inhibition rate.

Acknowledgement: This work was supported by the TÁMOP 4.2.4.A/2-11-1-2012-0001 project (Nemzeti Kiválóság Program Hazai hallgatói, illetve kutatói személyi támogatást biztosító rendszer kidolgozása és működtetése konvergencia program). The project is co-financed by the European Union and the European Social Fund. E. Sándor was supported by the „Research Grant of the University of Debrecen. The research was supported by COST Action FA1303.