

The effect of root exudates on the activity of fungi isolated from root and rhizosphere and investigate the relationship between these fungi and the effect of some of them on the growth rate of tomato plant

Msc. Zena H. Obead

Summary

The effect of root exudates of tomato plants on growth of fungi isolated from the root and rhizosphere zone were studied under laboratory condition, in addition to their interaction between these fungi and on growth of plants. The results demonstrated the appearance of *Aspergillus terrus*, *A. nidulans*, *Penicillium sp.*, *Fusarium solani* on rhizosphere soil. Similar isolates were recorded from root except *Fusarium oxysporum* which have different characters in colony, macroconidia and microconidia from rhizosphere isolate.

In depend on growth coefficient, the results exhibited no inhibitory effect or antagonistic relationship in duel culture treatments for *Penicillium sp.* & *F. solani* , *A. terrus* & *F. oxysporum* , *Fusarium spp.* isolates from root and rhizosphere and also between *A. terrus* & *Penicillium sp.* in which growth coefficient reached 1 G. C. In contrast, inhibitory effect was observed in treatment posses more than 1 G. C., *A. nidulans* revealed the highest rate of antagonism with *A. terrus*. Moreover, growth of *A. nidulans*, in PDA increased significantly compared with other fungal isolates, and it covered the plate within 4 days of treatment at 25 °C. The effect of *Fusarium spp.* isolates of root and rhizosphere on percentage germination and seedlings growth of tomato were tested by using plant growth incubator. *Fusarium sp.* Isolates of root (*F. oxysporum*) and rhizosphere (*F. solani*) , were reduced percentage germination to 10% and 47% respectively and that coincided with significant reduction in rate of emergence in particular in root isolate (33%), wilting and drop rates were 49 & 29% respectively. In contrast,

the rhizodpher isolate rates were 77%, 20%, 6% for emergence, wilting, and damping off seedlings. Healthy seedlings were affected according to that, which reached to 8% and 57% during the application of root and rhizospher isolates respectively. The effect of exudates of tomato roots on growth of isolated fungi were tested and revealed significant increasing of growth rate with the time of experiment, in particular, for *Penicillium sp.* Never the less, this effect was varied with treated fungi compared with untreated one. The results suggested the presence of mono and polysaccarides, proteins, Amino acids and that possibly support the growth and activity of these fungi.