Production Of Some Antibiotics By Rhizospheric Fungi.

Warda Eid Sayed Mohamed A shour

Root-rot, wilt diseases are the most important diseases of many crops (cotton, legumesand fruit trees). Biological control plays an important role in suppression of soil borne plantpathogens (root-rot and wilt disease)Instead of chemical substances. For this, the present workwas aimed to select the best organisms, which are good antagonists; studying ecologicalconsiderations associated with natural biocontrol; modes of action of biological control agents;separation and identification of antibiotics for the bioagent and mode of use of the antagonist.The obtained results can be summarized as follows:Eighty one fungal isolates belonging to 23 genera namely: Absidia, Acremonium,Alternaria, Aspergillus, Chrysonilia, Cladosporium, Cunninghamella, Eurotium, Fusarium,Fusoma, Geotichum, Montospora, Moniliella, Mucor, Mycogone, Nematoctonus, Penicillium,Blastomyces, Trichoderma, Rhizopus, Scopulariopsis, Streptothrix and Verticillium were isolatedfrom the rhizosphere of examined plants at Kafr Elshiekh.Forty two fungal isolates belonging to 14 genera namely: Alternaria, Aspergillus,Chrysonilia, Cladosporium, Eurotium, Curvularia, Fusarium, Penicillium, Rhizoctonia,Rhizopus, Scopulariopsis, Streptothrix, Trichoderma and Verticillum were obtained from therhizosphere of the examined plants at Baltim province.The causal organisms of root-rot and wilt diseases of cotton plants from Kafr Elshiekhlocalities were isolated. Twenty six fungal isolates belonging to 9 genera namely: Acremonium,Alternaria, Blastomyces, Fusarium, Fusoma, Mycogone, Rhizoctoniasolani, Scopulariopsis andVerticillium were isolated from the rhizosphere of the different plants collected from KafrElshiekh localities.Also fourteen dangerous agents belonging to 5 genera were isolated from wilted plants inthe cultivated areasof Baltim localities these isolates are: Alternaria, Fusarium, Rhizoctonia,Scopulariopsis and Verticillum.Virulent and avirulent organisms were tested against each other in-vitro to select the mostactive organism as a biocontrol agent. Data showed varying degrees of antagonism against thefungal pathogens. About 20 fungal species out of 55 isolates were the most promising i.e.Trichoderma harzianum (Vf), T. harzianum (Ta), T. harzianum (Sb), Cladosporiummacrocarpum (Ta), C. resinea (Ta), Absidia corymbifera (Ta), Absidia corymbifera (Vf), C.cladosporioides (Vf), Aspergillus niger (Vf), Aspergillus niger (Td*), Aspergillus niger (Vf*),Aspergillus niger (Sb), Chrysonilia sitophila (L), Chrysonilia sitophila (Ta), Chrysoniliasitophila (Vf), Aspergillus niger (Ta), M. altissima (Vf), Aspergillus penicillioides (Vf),Penicillium echinulatum (L), Aspergillus flavus (C) (from Kafr Elshiekh localities).While about about 12 isolates “from Baltim

localities” out of 28 isolates were promisingi.e. Trichoderma harzianum (Sb), T. harzianum (Sb*), T. harzianum (Vf), T. harzianum (Ta), T.harzianum (C), Penicillium paraphergal (C*), Aspergillus flavus (Ta), C. sphaerospernum (Vf),A. niger (Ta), A.niger (Vf), A. niger (C) and T. Verdi (Sb).To avoid the common problem of the introduced antagonist failing to establish andsurvive in the rhizosphere, the most potent 9 fungal antagonistic strains were selected perfectlyto be tested against each other.the selected fungal antagonists were tested for their ability toantagonist each other. Data revealed the presence of variable antagonistic effects between thedifferent antagonistic fungi. Aspergillus niger (Ta)K, T. harzianum 64(Vf)B, T. harzianum64(Ta)B, T. harzianium 42(Vf)K, T. harzianum 42(Sb)K, T. harzianum 64(C)B, C.macrocarpum 15(Ta)K, Cunninghamella mart 17(Vf)K and T. harzianum 64(Sb) B. Data alsoindicated that Trichoderma harzianum isolated from Vicia faba roots from Kafr Elsheikh localitywas the most powerful biological agent. It showed broad spectrum and high stability against thetested organisms. In the second place T. harzianium (Vf) isolated from Baltim it also showedhigh activity. Aspergillus niger isolated from Triticum durum from Kafr Elsheikh was less activebut it showed clear and stable zone.In-vivo studies,to determine the effect of biocontrol agents on the pathogens, revealedthat Trichoderma harzianum 42(Vf) was more efficient as biocontrol agent in reducing dampingoffand wilt diseases incidence in cotton plants. It was selected for the preceding experiments.Antibiotics were extracted from Trichoderma harzianum 42(Vf) culture filtrate withethylacetate.The ethyl acetate extract of culture filtrate of Trichoderma harzianum was subjected toGas chromatography / Mass spectroscopy (GC / MS). Fifty three compounds were identifiedand classified into (2 acetlenic, one furanoid and 11 benzenoid products) 1- 14), hydrocarbons(15–29), volatile alcohols (30 – 37) , fatty acid esters (38 – 49) and phthalic acid products (50 –53). Many compounds were reported as antifungal and antibacterial.