REACTION OF *CICER ARIETINUM* TO CULTURE FILTRATE OF *ASCOCHYTA RABIEI*

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Ascochyta rabiei (Pass.) Labr., the casual agent of the blight, is the most destructive pathogen of chickpea crop in areas where rainfall or high humidity occur during growing season. Until now, involvement of toxic metabolites in the pathogenesis have not been reported except for a note reported by Alam and Strange (1989, *NATO ASI Series*, Vol. H 27:385-386).

In our work we assessed the phytotoxic activity of culture filtrate of *A. rabiei*. Chickpea lines differently reacting to the artificial inoculation with the fungus have been challenged with the toxic filtrate.

On the basis of preliminary experiments, the toxic filtrate has been obtained by a static culture of *Ascochyta* virulent isolates for 21 days (21 ± 1 °C) on the broth described by Nachmias *et al.* (*Physiol. Plant. Path.* 1977, 10:147-157). The crude culture filtrate inhibited root elongation of germinating chickpea seeds and caused chlorosis and epinasty on chickpea cuttings.

Toxic activity of culture filtrate at different concentrations has been tested on chickpea lines both susceptible and resistant to the artificial inoculation with the fungus. When used at the concentration of 60%, a correlation between insensivity to the filtrate and resistance to the pathogen has been observed. Chickpea genotypes reacted differentially when tested with filtrates of different pathogenic groups of *A. rabiei* according to their reaction to artificial inoculation.

Our study indicates that toxic metabolites produced by *A. rabiei* could be involved in the pathogenesis and could have selective toxicity on chickpea genotypes. If these results will be reconfirmed, culture filtrate would have a practical importance as screning tool of resistant genetic matetial. The role as well as the host and race specificity of the filtrates have to be elucidated. A characterization of the phytotoxic compounds would be also profitable for an application of them as reliable selective agents in the screning for resistance to *Ascochyta* blight.

CHARACTERIZATION AND PHYTOTOXIC ACTIVITY OF PECTIC ENZYMES PRODUCED BY *PHOMA TRACHEIPHILA* (PETRI) KANC. ET GIK.

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Pectic enzymes produced by pathogens have been supposed to be involved in the pathogenesis of vascular diseases of plants. In order to elucidate the molecular mechanism of the pathogenesis of citrus malsecco disease, a severe wilt disease cau-

sed by *Phoma tracheiphila* (Petri) Kanc. et Gik., we have studied the patterns of polygalacturonase activities in the culture filtrates of this fungus.

Two strains of the fungus, Pt 42 and Pt 55, which differed in pathogeneticity and some cultural characteristics, were tested for their ability to produce pectic enzymes. The two strains were grown on a medium containing 1% pectin as sole carbon source. Culture filtrates were collected by filtration and then partially purified through DEAE-Sepharose. The eluates, containing the polygalacturonase activities, were tested for both enzymatic and phytotoxic activities. Eluates obtained from both strains showed a significant toxic effect on sour orange leaf explants along with a four-fold increase in the polygalacturonase specific activity. Electrolyte leakage was enhanced in leaf explants treated with the eluates. The patterns of polygalacturonase activities were further studied after purification of the DEAE eluate through a CM-Sepharose column.

The isoenzymatic pattern showed the presence of three major enzymatic forms in the Pt 42 strain whereas in the strain Pt 55 four different activities were found. Two enzymatic forms in both strains were chromatographically similar, suggesting that the pathogenicity of the two strains may be related to the excretion of particular polygalacturonase forms. However, we cannot exclude that all enzymatic species are important for plant cell wall degradation.

As polygalacturonases are excreted after their synthesis in the cytosol, it was interesting to find out whether the secreted forms were similar to the cytosolic enzymes. To this end we have partially purified the polygalacturonase activities in the mycelium of both strains in the same conditions used for the secreted forms.

Our results show that for both strains tested the number of enzymatic forms is the same both in the mycelium and in the culture filtrate; however, the chromatographic behaviour of the cytosolic enzymes was different. This is not surprising as excreted proteins are largely processed before their release. However, when the two mycelium isoenzymatic patterns were compared we found that the cytosolic enzymes were similar in both strains. This last finding could be explained by assuming that the two *P. tracheiphila* strains, Pt 42 and Pt 55, contain different processing peptidases in the excreting pathways.

D-GLUCOSAMINE AND N-ACETYL-D-GLUCOSAMINE METABOLISM DURING ELONGATION GROWTH INDUCED BY FUSICOCCIN IN AVENA COLEOPTILE SEGMENTS

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Plant glycoproteins are accumulated in vacuoles, are secreted into the walls, and are incorporated into the membranes of the reticulum endoplasmic, the Golgi apparatus, the nuclear envelope and the plasmamembrane. Many of these glycoproteins have asparagine-N-acetyl-D-glucosamine-linked oligosaccharide chains (Kaushal G.P., Szumilo T., Elbein A.D. 1988. In: *The Biochemistry of Plants*, J. Preiss ed., Academic Press, New York 14:421).