

phenoloxidases. They produced a significant increase in browning of slices without affecting PHY accumulation. F) Oxyradicals scavengers enzymes SOD and CAT slightly reduced the browning and only after 1 day of incubation. G) Phenylthiourea, a strong irreversible inhibitor of phenoloxidases, fully inhibited browning at 20 µg/slice without affecting PHY accumulation.

This clearly indicates that the metabolic events leading to PHY accumulation and to browning process are not necessarily interdependent.

BROMINATED METABOLITES OF *PSEUDOMONAS SYRINGAE* PV. *SYRINGAE*

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The B-350 syringomycin and the B-427 syringotoxin producing strains of *Pseudomonas syringae* pv. *syringae* have been grown in the SMR-C chemically defined medium of Surico, Lavermicocca and Iacobellis (Phytopath. Medit., 27, 163-168, 1988), in which histidine chloride has been replaced by histidine base and calcium chloride by calcium nitrate. On addition of sodium bromide to the above medium some new substances were formed (HPLC), in particular, with strain B-350 the halogen-free syringomycin-E, and the bromine containing syringomycin-E and -G, and with strain B-427 the halogen-free syringotoxin and its bromine derivative (FAB-MS). In the absence of halogenides the amount of halogen-free metabolites was further increased while the halogenated derivatives were not detectable.

Data concerning the chemical characterization and the biological activity of the above metabolites will be reported.

Mass spectral data were obtained at Servizio di Spettrometria di Massa del C.N.R. - University of Naples. This work has been supported by the Italian Ministry for the University and for Scientific and Technological Research, as well as by grants of the Italian Research Council (CNR)-Progetto Finalizzato «Chimica Fine II» and of NATO.

PRELIMINARY RESULTS ON THE PRESENCE OF SYRINGOMYCIN-LIKE SUBSTANCES IN BEAN TISSUES INFECTED BY *PSEUDOMONAS SYRINGAE* PV. *SYRINGAE*

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Syringomycin (SR), a phytotoxin whose structure has recently been elucidated, has been reported to contribute significantly to the virulence of the different ecotypes of *Pseudomonas syringae* pv. *syringae*. Although its presence in the diseased and

in toxin-treated tissues was demonstrated by using a fluorescent antibody specific to the toxin preparation, syringomycin was never isolated from diseased tissues.

For this reason etiolated bean cotyledons, a more uniform and easier to handle host tissue than those used previously, were inoculated with selected *P. s. pv. syringae* strains isolated from different host plants.

Some of the strains induced slightly depressed water-soaked areas which enlarged with time and were characterized by the presence of abundant bacterial exudates on their surface.

Conversely, other strains induced the formation of depressed necrotic lesions at the inoculation sites only. The development and final appearance of the symptoms, resembling respectively the compatible and incompatible plant-pathogen interaction, confirmed the presence of pathotype in *P. s. pv. syringae* and showed, furthermore, that etiolated cotyledons are a suitable tissue for studies on the pathogenesis of *P. s. pv. syringae*.

Extracts of diseased tissues and bacterial exudates washed off the infected tissues showed relatively high levels of antibiotic activity against *Rhodotorula pilimanae* when compared to that present in the tissues inoculated with the incompatible strains. In this connection, it cannot be excluded that the low inhibitory activity present in the tissues inoculated with the incompatible strains is determined by the pathogen-induced phytoalexins in the host tissues. No antibiotic activity, or just traces of it, were observed in cotyledons inoculated with water.

Active fractions derived from the purification of bacterial exudate extracts analysed by TLC showed several ninhydrin reacting bands, and when the TLC plates were covered with PDA containing *R. pilimanae* cells, an inhibition area appeared in a zone with an SR-like R_F. Instead most of the activity present in diseased tissue extracts was lost during the purification procedure. However, an accurate analysis of the active fractions showed that the activity was mostly associated to precipitates that formed during the concentration of the above fractions. Our present efforts are directed to unequivocally demonstrate that the SR-like activity in the infected tissues is due to syringomycin.

GENETIC ASPECTS OF CYTOKININS PRODUCTION IN *PSEUDOMONAS AMYGDALI*

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The hyperplastic bacterial canker of Almond is a disease induced by *Pseudomonas amygdali*, a bacterium which secretes in culture cytokinins and auxins and their production seems correlated to the virulence of the producing strains.

Among the plant pathogenic bacteria, plasmid-associated traits including the virulence/pathogenicity factors have been described. This is the case with phytohormone production in *Agrobacterium* sp., *Pseudomonas syringae* pv. *savastanoi* and *Rhodococcus fascians*, responsible for growth alteration of infected host plants.