

**PL-P17.****ANTIOXIDANT AND ANTIMICROBIAL ACTIVITIES OF VOLATILE AND NON VOLATILE FRACTIONS OF ROSEMARY**

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In this work the content and composition of polyphenols present in volatile and non volatile fractions isolated from two phenotypes of *Rosmarinus officinalis* L. grown under the same soil and climate conditions are compared. The relationship between the composition and the antioxidant and antimicrobial activities were studied. Patterns of bioactives were analyzed by GC/MS and HPLC, the antioxidant activity was studied by the DPPH assay and the antimicrobial activity by the broth dilution method.

Results showed that the chromatographic patterns of the non volatile polyphenols in both plants are qualitatively similar, although they differ significantly in the content of each main bioactive compound. The phenotype exhibiting the major content of non volatile diterpens resulted to possess the main antioxidant and antimicrobial activities. The volatile fraction of this plant also presented the highest antioxidant activity.

Essential oils and non-volatile polyphenol extracts are of interest due to their antioxidant and antimicrobial properties. In conclusion, both phenotypes of rosemary presented a typical pattern of bioactive molecules, associated with a specific antioxidant and microbicidal action.

**PL-P18.****APOPLASTIC HYDROPHOBIC PROTEINS INVOLVED IN TUBER DEFENSE RESPONSE TO *P. infestans***

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During infection, oomycetes secrete effectors into the plant apoplast where they interact with host resistance proteins. In response, large amounts of protease and protease inhibitors (PIs), are accumulated. We analyzed differentially expressed Apoplastic Hydrophobic Proteins (AHPs) in potato tubers from Innovator (resistant) and Spunta (susceptible) cvs, after wounding and *P. infestans* infection. Intercellular washing fluid was extracted from control, wounded or infected tubers at 0, 24 and 48 h and chromatographed into a PepRPCtmHR5/5 in FPLC. After elution with acetonitrile, fractions were analyzed by SDS-PAGE and proteins identified by MALDI-TOF-MS. Innovator cv. showed a higher basal AHP content and hydrophobicity than Spunta cv. In the latter, infection induced accumulation of patatins and PIs, whereas in Innovator cv. no changes in PIs accumulation were observed. In response to *P. infestans* infection, lipoxygenase, enolase, annexin p34 and glutaredoxin/cyclophilin were accumulated in both cvs. Hydrophobicity of AHPs was higher after 24 h of wounding and infection in both cultivars. These results suggest that an increase in AHPs concentration would be related with the protection against the oomycete and with the degree of resistance to pathogens. Finally, changes in hydrophobicity of PIs may induce changes in protease-inhibitor interaction affecting the defense response.

**PL-P19.****A PLANT NATRIURETIC PEPTIDE FROM *Xanthomonas* MODIFIES HOST PLANT PHOTOSYNTHESIS**

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Citrus canker, caused by *Xanthomonas axonopodis* pv. *citri* (Xac), is one of the most serious diseases affecting citrus production worldwide. The pathogen enters host plant tissues through stomatal openings and wounds and then colonizes the apoplast causing the break of the epidermis due to cell hyperplasia. The infection is visualized as raised lesions on leaves, fruits and stems. Xac contains a gene encoding a plant natriuretic peptide (PNP), not present in any other bacteria. PNPs are a class of extracellular, systemically mobile molecules that elicit a number of plant responses important in homeostasis and growth. We expressed and purified this bacterial PNP (XacPNP) and demonstrated that this protein alters physiological responses including stomatal opening in plants. To better characterize the role of XacPNP in the interaction with the plant we measured chlorophyll fluorescence parameters and water potential of citrus leaves infiltrated with recombinant purified XacPNP and demonstrated that the peptide improves both the photosynthesis efficiency and the hydration condition of the tissue. Moreover, when we analyzed enzymes involved in the photosynthetic process we observed increased expression levels of them in the presence of XacPNP purified protein. Our findings suggest that the pathogen uses this plant-like peptidic hormone to modulate the host metabolism to its own advantage.

**PL-P20.****PHOSPHORUS DEFICIENCY AND FLUORESCENT COMPOUNDS EXCRETED BY ROOTS AND SEEDS EXUDATES IN CROP PLANTS**

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Confirming some previous results we show here that by inducing a stress condition (phosphorus shortage) some crops increase their excretion of fluorescent compounds in root exudates. In our experiments rapeseed plants entered into phosphorus shortage well before sunflower and soybean plants, which could be attributed to the seed size that limits the amount of phosphorus reserves in the seed. Chlorogenic acid is notoriously increased as well as scopoletin in rapeseed plant grown under phosphorus deficiency. Looking for a possible role for these secondary metabolites we tested the effect of root and seed exudates on the growth pattern induced on fungal growth. We observed the maximum induction of sclerotia formation with soybean seed exudates in *Macrophomina phaseolina*, although in our in vitro schemes the fungi finally overcame this condition and grew. It is as if both, an inducer of sclerotia and an inducer of mycelial growth were present in exudates, the effect of the latter somehow overriding the former. Distracting energy equivalents from a normal growing mycelium, inducing the formation of resistance structures like sclerotia, might be an opportunity to retard fungal invasion under a condition of extreme plant weakness.