

BOOK OF ABSTRACTS

3rd International Conference on Plant Biology (22nd SPSS Meeting)



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Institute for Biological Research "Siniša Stanković", University of Belgrade

Faculty of Biology, University of Belgrade

**3rd International Conference
on Plant Biology
(22nd SPPS Meeting)**



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Induction of potato (*Solanum tuberosum* L.) defense genes by French marigold (*Tagetes patula* L.) essential oil

PP2-12

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When attacked, plants activate defense mechanisms including volatile emission. Besides having a pest repellent effect, volatiles can induce defense response in surrounding unharmed plants. French marigold (*Tagetes patula* L.) essential oil (EO) was isolated from the above-ground parts of plants collected from nature by hydrodistillation using Clevenger apparatus. GC/MS analysis revealed the presence of 42 compounds, of which 97% (32 compounds) have been identified. The monoterpene fraction was dominant (76.9%) with terpinolene (32.4%) and limonene (14.7%) as the most abundant compounds. In order to investigate the potential of marigold EO to induce the defense of potato, we analyzed 3 genes related to the induced resistance (IR): pathogenesis related *PR-2* and *PR-5* genes, and proteinase inhibitor *Pin2*. The potato plants were exposed to EO volatiles during 4, 8 and 12 h. Two leaves of EO-treated or untreated control plants were collected, and plants were then additionally injured by mechanically wounding leaves across the leaf surface. After 24 h of wounding, another two leaves from each plant were collected and expression of the IR related genes was analyzed by qPCR method. EO induced altered expression of PR genes, while *Pin2* wasn't affected by the treatment. Mechanical wounding increased the expression of all genes after 4 and 8 h of EO treatment, with up to 4-fold change in *PR-2*. However, in plants exposed to EO for 12 h before wounding, the level of transcription in *PR-2* and *Pin2* was similar to that detected in untreated controls. These findings support the efforts for environmentally-safe pest control in crops by using natural compounds.

Keywords: *Solanum tuberosum* L., *Tagetes patula* L., essential oil, induction of defense

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Chilling tolerance in maize: morphological and physiological changes in maize inbreds under low temperature conditions

PP2-13

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Cold stress has become a serious problem in maize seed production, due to the on-going climatic changes. Severe summer droughts call for earlier sowing when temperatures are sub-optimal for seed germination and early plant development. Also, different susceptibility of hybrid parents prevents synchronization in male and female flowering and results in the absence of fertilization. A pilot experiment on three maize inbreds with different sensitivity was conducted with