

Serbian Plant Physiology Society

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Institute for Biological Research „Siniša Stanković”, University of Belgrade

# 2<sup>nd</sup> International Conference on Plant Biology

## 21<sup>th</sup> Symposium of the Serbian Plant Physiology Society

### COST ACTION FA1106 QUALITYFRUIT Workshop



Petnica Science Center, June 17-20, 2015

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covery from salt stress conditions of three populations of *B. perfoliata* collected from different natural habitats was examined. Germination rate, germination velocity and rate of germination recovery were tested. Results showed that germination characteristics depended on NaCl pre-treatment and were population-specific. Increase in salt concentration inhibited seed germination and germination recovery rate. Additionally, seeds of *B. perfoliata* population collected from sandy locality of Vojvodina showed different germination pattern in comparison with seeds collected from saline habitat; salt treatment improved their germination rate, but also attenuated germination velocity response.

**Keywords:** salinity, stress, *Blackstonia perfoliata*, germination

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### **Volatile compounds of three *Nepeta* species inhibit seed germination, reduce seedling growth and induce oxidative stress in garden cress (*Lepidium sativum* L.)**

**PP8-35**

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Phytotoxic effects of volatile organic compounds (VOCs) from *Nepeta* species on agricultural and weed species have been previously demonstrated, and are usually attributed to iridoid monoterpenes nepetalactones. Here we studied the effect of VOCs of three endemic *Nepeta* species, differing in their qualitative nepetalactone content, on seed germination and seedling growth of garden cress (*Lepidium sativum* L.). Garden cress was exposed to the atmosphere enriched with VOCs released from the leaf surface of three *Nepeta* species. Identification of VOCs was performed by headspace GC-MS, while the concentrations of nepetalactone in the atmosphere of culture vessels were detected by PTR-MS. Volatiles released from *N. rtanjensis* and *N. sibirica* shoots reduced seed germination and inhibited seedling growth of garden cress. Phytotoxic effect of *N. rtanjensis* and *N. sibirica* originates from the dominant bioactive compound of these species – nepetalactone. Stereochemistry of nepetalactone considerably determines its phytotoxic potential, *trans,cis*- isomer is more active than the *cis,trans* nepetalactone. Phytotoxic effect of nepetalactone is reflected through its effect on biochemical processes that are the consequence of plants disturbed antioxidative system: the inhibition of activities and changed profiles of peroxidases, catalase, Fe- and Cu/Zn-superoxide dismutase isoforms were observed.

**Keywords:** phytotoxicity, peroxidase, catalase, Fe-superoxide dismutase, CuZn-superoxide dismutase

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