



# **BOOK** of **ABSTRACTS**

## **4<sup>th</sup> INTERNATIONAL CONFERENCE ON PLANT BIOLOGY (23<sup>rd</sup> SPPS Meeting)**



**6-8 OCTOBER 2022  
BELGRADE**

**Serbian Plant Physiology Society**

**Institute for Biological Research “Siniša Stanković”  
National Institute of Republic of Serbia, University of Belgrade**

**Faculty of Biology, University of Belgrade**

**BOOK OF ABSTRACTS**  
**4<sup>th</sup> International Conference**  
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## Tissue-specific distribution of antioxidants during ripening of *Solanum dulcamara* L. fruits: the redox state alterations

PP3-30

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Identifying plant species tolerant to hypoxia and determining mechanisms this tolerance is standing upon may aid in improving nutritional quality of fruits of waterlogging-intolerant crops. Berries of *Solanum dulcamara* L. (bittersweet), a Eurasian species belonging to the Solanaceae family that grows in both dry habitats and wetlands, represent a suitable hypoxia-tolerant model species to study redox processes in relation to fruit development. Using biochemical and physico-chemical analyses, we examined differences in enzymatic and non-enzymatic components of the antioxidant system of *S. dulcamara* during the transition from mature green (MG) to ripe red (RR) developmental stage. By combining untargeted (UHPLC/Orbitrap MS<sup>n</sup>) and targeted (UHPLC-DAD MS<sup>2</sup>) metabolomics approaches, we revealed a significant change in polyphenolic profile of *S. dulcamara* fruits during fruit ripening. In order to improve knowledge on the link between metabolism and cell redox status, Electron Paramagnetic Resonance Spectroscopy (EPRS) and Imaging (EPRI) of reactive oxygen species (ROS) in intact fruits, fruit sections and extracts, were performed in parallel with the analysis of tissue-specific distribution of antioxidants and activity of antioxidant enzymes, which demonstrated alterations in the redox state and the increase of total antioxidant capacity of bittersweet berries during ripening, especially of outer layers (pericarp) of the fruits. This knowledge could provide important information to direct research on fruit quality improvement of flood-intolerant crops that are a close relatives of bittersweet, such as tomato and eggplant.

**Keywords:** waterlogging, fruit, bittersweet, antioxidant system, metabolomics

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