BOOK of ABSTRACTS

4th INTERNATIONAL CONFERENCE ON PLANT BIOLOGY

(23rd 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
4th International Conference on Plant Biology

(23rd SPPS Meeting)

Belgrade, 2022

CIP - Каталогизација у публикацији - Народна библиотека Србије, Београд

581(048)

INTERNATIONAL Conference on Plant Biology (4 ; 2022 ; Belgrade)

Book of Abstracts / 4th International Conference on Plant Biology [and] 23rd SPPS Meeting, 6-8 October 2022, Belgrade ; [organized by] Serbian Plant Physiology Society [and] Institute for Biological Research "Siniša Stanković", University of Belgrade [and] Faculty of Biology, University of Belgrade ; [editor Milica Milutinović]. - Belgrade : Serbian Plant Physiology Society : University, Institute for Biological Research "Siniša Stanković" : University, Faculty of Biology, 2022 (Zemun : Alta Nova). - 169 str. : ilustr. ; 24 cm

Tiraž 30. - Registar.

ISBN 978-86-912591-6-7 (SPPS)

1. Društvo za fiziologiju biljaka Srbije. Sastanak (23 ; 2022 ; Beograd)

a) Ботаника - Апстракти

COBISS.SR-ID 74996233

4th International Conference on Plant Biology
(23rd SPPS Meeting)
6-8 October, Belgrade

Publishers	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
Editor	Milica Milutinović
Graphic design	Dejan Matekalo
Prepress	Marija G. Gray
Printed by	Alta Nova, Zemun
Print run	30 pcs
	Belgrade, 2022

Suported by the Ministry of Education, Science, and Technological Development of the Republic of Serbia

Tissue-specific distribution of antioxidants during ripening of *Solanum dulcamara* L. fruits: the redox state alterations

PP3-30

Milica Milutinović[1], Đura Nakarada[2], Jelena Božunović[1], Uroš Gašić[1], Suzana Živković[1], Jelena Savić[1], Marijana Skorić[1], Nina Devrnja[1], Tijana Banjanac[1], Miloš Todorović[1], Miloš Mojović[2], Danijela Mišić[1]

(milica.milutinovic@ibiss.bg.ac.rs)

[1] Institute for Biological Research "Siniša Stanković" – National Institute of Republic of Serbia, University of Belgrade, Bulevar Despota Stefana 142, 11060 Belgrade, Serbia

[2] Faculty of Physical Chemistry, University of Belgrade, Studentski trg 12-16, 11000 Belgrade, Serbia

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^n) and targeted (UHPLC-DAD MS^2) 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

Acknowledgements: This work has been supported by the networking activities "Oxygen sensing a novel mean for biology and technology of fruit quality" (CA18210) which is implemented under the COST Action "Roxy-COST" funded by the European Cooperation in Science & Technology (2019–2023), and by the Serbian Ministry of Education, Science and Technological Development of the Republic of Serbia, grant numbers451-03-9/2021-14/200007, 451-03-9/2021-14/200146, 451-03-9/2022-14/200007 and 451-03-9/2022-14/200146.