



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

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SECTION 2

Plant Stress Physiology

Comparative study of physiological, biochemical and morphological parameters in two tomato genotypes, wild type cv. Ailsa Craig and its ABA-deficient mutant *flacca*

PP2-38

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The objective of this study was to determine the constitutive differences in physiological, biochemical and morphological parameters between two tomato genotypes with different levels of abscisic acid (ABA) – wild type Ailsa Craig (WT) and ABA-deficient mutant *flacca*. Due to reduced ABA biosynthesis, *flacca* mutant is a suitable model system for investigating the influence of endogenous leaf ABA level in response to drought in plants. Within this research, plants were grown under controlled conditions at 800 $\mu\text{mol m}^{-2}\text{s}^{-1}$, until the end of the vegetative phase when samples were taken. The accumulation of the most abundant soluble sugars, sorbitol, phenolic compounds, and ascorbate in the leaves, as well as the cell walls compounds, were analyzed. Lower constitutive ABA content in *flacca* was accompanied by two times higher stomatal conductance and similar leaf water potential. Higher content of phenolic compounds (HBAs, HCAs, flavonoids) was determined in WT plants, which was in contrast with the elevated accumulation of the epidermal flavonoids in *flacca*. Larger accumulation of sorbitol in WT, and of the most abundant soluble sugars (glucose, fructose and sucrose) indicate that *flacca* accumulates lower content of osmolytes which was opposite to the condition at low light. However, an alternative mechanism related to cell wall modulation imposed its importance in the development of plant acclimation mechanisms under stressful environmental conditions in tomato deficient in ABA. On the other hand, an elevated ascorbate redox state in *flacca* indicates a higher sensitivity to oxidative stress of the mutant compared to WT even in optimal environmental conditions.

Keywords: tomato, *flacca* mutant, phenolic compounds, cell wall, ascorbate

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