

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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centration in the soil on the plant tolerance, accumulation and translocation of Cd in three different willow clones (*Salix viminalis*, *S. matsudana* and *S. alba*), as well as their potential for phytoextraction. Cuttings were grown in the greenhouse using the soil culture method. Treatments consisted of Cd (control, 3 and 6 ppm), applied separately and in combination with citric acid (20 mM kg<sup>-1</sup> of dry soil). Total amounts of Cd in various plant parts and soil were determined using an Atomic Absorption Spectrometer. Generally, willows were resistant to applied concentrations of Cd, and didn't show any visible phytotoxic symptoms. Morpho-physiological parameters of clones were differently affected by Cd and CA treatments. Results have shown statistically different impact of CA on proline content in leaves. The addition of citric acid has increased transport of the accumulated Cd from the roots to the aerial part in *S. viminalis* and *S. alba* in comparison with the same treatments without CA. Bioaccumulation factor of all treatments was higher than 1, reliably suggesting good potential of selected willow clones for phytoextraction.

**Keywords:** phytoremediation, cadmium accumulation, willow clones

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## Mangiferin and total phenol content in two *Iris* species during the vegetative season in genotypes originating from contrasting habitats

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Polyphenols (phenolic acids, flavonoids, xanthenes) are a large and chemically diverse class of secondary metabolites which occur widely in plants. *Iris* species are known to be rich in isoflavonoids, flavonoids and C-glucoxanthenes. Mangiferin, naturally occurring C-glucoxanthone, was the first xanthone to be investigated pharmacologically and has been found to exhibit various pharmacological and biological effects. *Iris pumila* and *Iris variegata* are native to the area stretching through central and southeastern Europe. Genotypes of these two congeneric species inhabited locations with contrasting light conditions (exposed grassy and forest habitats) in Deliblato Sands, protected sandy area 40 km NE from Belgrade, Serbia. Above- (leaves) and below-ground (rhizomes) plant organs were taken for secondary metabolite analysis in the beginning and at the end of the vegetative season (spring and autumn). The purpose of this research was to screen two *Iris* species for their mangiferin and total phenolic content using HPLC and Folin-Ciocalteu method. In addition, we wanted to establish if clones of each species growing in contrasting habitats differed in the content of these compounds. Mangiferin amount in leaves was higher in spring than in autumn in both *Iris* species. The same pattern was observed in rhizomes of *I. variegata*. Total phenol content in spring was higher in leaves comparing to rhizomes in genotypes inhabiting both localities. Contrary, in autumn, higher total phenolics were observed in rhizomes of genotypes originating from both habitats in both *Iris* species.

**Keywords:** *Iris*, mangiferin, total phenolic content, contrasting light habitats, vegetative season

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