

Serbian Plant Physiology Society

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

# 19<sup>th</sup> SYMPOSIUM

of the Serbian Plant Physiology Society

*Programme and Abstracts*



Banja Vrujci, 13-15 June 2011

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## Phenolic content and antioxidant activity of *Teucrium scordium* L. subsp. *scordium*

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Total phenolic content, concentration of flavonoids and *in vitro* antioxidant activity of methanolic, acetone and ethyl acetate extracts from *T. scordium* subsp. *scordium* were determined. Total phenolic content and flavonoid concentration were measured spectrophotometrically. Total phenols were determined using Folin-Ciocalteu reagent and their amounts ranged from 52.60 to 220.89 mg/g, expressed as gallic acid equivalents. The high total phenolic content was measured in methanolic extract. The total flavonoid concentrations varied from 152.78 mg/g to 190.45 mg/g, expressed as rutin equivalents. The highest concentration of flavonoids was in ethyl acetate extract. Antioxidant activity of extracts was determined *in vitro* using DPPH reagent and expressed as IC<sub>50</sub> values that ranged from 50.23 to 374.92 µg/ml. Methanolic extract had the highest total phenolic content and exhibited strong antioxidant activity. The content of phenols in plant extracts of the *T. scordium* subsp. *scordium* depends on the type of solvents used for extractions. High solubility of phenols in polar solvents provides high concentration of these compounds in the methanolic extract. The obtained values for total phenolic content indicate that the methanol is the most effective solvent for extraction of phenolic compounds from the *T. scordium* subsp. *scordium*. The results of analysis show that some extracts of *T. scordium* subsp. *scordium* are very rich source of phenolic compounds with strong DPPH radical scavenging activity.

## Production rosmarinic acid and phenols in *Rindera umbellata* plants growing *in vitro* culture

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*Rindera umbellata* (Waldst. & Kit.) Bungle (*Boraginaceae*) is a plant species protected by law as a natural rarity. There are no reports in the literature on the medicinal characteristics of *R. umbellata* until now. The purpose of the present study was to develop a suitable method for *in vitro* propagation and *ex situ* protection of *R. umbellata* and to investigate the influence of different carbohydrates (sucrose, fructose and glucose) on production of secondary metabolites with health promoting effects. In experiments were used adventitious buds, obtained from *in vitro* growing rosettes. The explants were transferred to MS media supplied with different concentrations of sucrose, fructose or glucose, ranging from  $3 \times 10^{-3}$  M to 1 M. The content of both rosmarinic acid and total phenols in *R. umbellata* plants increased with increasing carbohydrate content of the MS media. Secondary metabolites content depended not only on applied sugar concentration, but on sugar type as well. The highest amounts of total phenols and rosmarinic acid were recorded for plants grown on MS media supplemented with  $3 \times 10^{-1}$  M sucrose.

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