

Serbian Plant Physiology Society

Institute for Biological Research "Siniša Stanković", University of Belgrade

**2nd International Conference
on Plant Biology**

**21st Symposium of the Serbian
Plant Physiology Society**

**COST ACTION FA1106
QUALITYFRUIT Workshop**

Book of Abstracts



Petnica, 17-20 June 2015

2st International Conference on Plant Biology • 21th Symposium of the Serbian Plant Physiology Society • COST ACTION FA1106 QUALITYFRUIT Workshop
PETNICA SCIENCE CENTER 17-20 JUNE, 2015

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PROGRAMME

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PETNICA SCIENCE CENTER 17-20 JUNE, 2015

Wednesday 17th June, 2015

09:00-14:00 Registration
 14:00-15:00 Lunch

Section I: Plant Biotechnology

15:00-15:30 Opening Ceremony
 15:30-16:00 (Invited talk) **Alain Tissier**
 Systems biology of a plant cell factory, the tomato glandular trichomes
 16:00-16:20 (Invited talk) **Jules Beekwilder**
 Biotechnological production of plant compounds
 16:20-16:40 (Invited talk) **Milen Georgiev**
 Metabolomics, lead, discovery and plant biotechnology: perfect holistic match?
 16:40-17:00 (Invited talk) **Dragana Božić**
 Exploring the secondary metabolism in trichomes of *Salvia fruticosa* and *Rosmarinus officinalis*: the case of carnosic acid

17:00-17:30 Coffee break
 17:30-17:45 (Selected talk) **Milica Bogdanović**
 Problems in detecting activity of fluorescent reporter genes – case of DsRED and GFP

17:45-18:00 (Selected talk) **Stevan Jeknić**
 Alteration of flower color in *Solanum lycopersicum* through ectopic expression of a gene for capsanthin-capsorubin synthase from *Lilium lancifolium*

18:00-18:15 (Selected talk) **Miloš Prokopijević**
 Characterization of soybean hull peroxidase immobilized on glycidyl methacrylate copolymers

18:30-19:30 Poster session: *Plant Biotechnology*
 20:00-21:00 Dinner
 21:00- Wine tasting

Thursday 18th June, 2015

08:00-09:00 Breakfast

Section II: Plant Growth, Development, Metabolism and Nutrition

09:00-09:30 (Invited talk) **James Giovannoni**
 Harnessing genetic diversity to better understand regulation of tomato fruit ripening and nutritional quality

09:30-09:50 (Invited talk) **Christian Fankhauser**
 Photoreceptor-mediated growth responses in Arabidopsis

09:50-10:10 (Invited talk) **David Honry**
 Male germline development: lesson from the -omics

10:10-10:30 (Invited talk) **Dragan Vinterhalter**
 Acid growth theory, auxin and potato phototropism

Hypoglycemic and hypolipidemic effects of *Aronia melanocarpa* fruit juice in normal rats

PP3-11

Đurđica Ignjatović¹, Gordana Tovilović¹, Mirko Tomić¹, Ranković Slavica²,
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The aim of this study was to assess how the unlimited drinking of *Aronia melanocarpa* fruit juice, rich in phenolic substances (1.177 g L⁻¹ gallic acid equivalents), may affect the levels of several biochemical markers in the rat plasma: glucose (Glu), total cholesterol (ChT) and its fractions (HDL and LDL), triglycerides (TG) and transaminases (ALT and AST). Young male rats were being supplied with 3 combinations of juice solutions in drinking water for 34 days, and their blood samples were collected for analysis after animal sacrifices on day 35. The experimental groups contained 20% juice solutions in tap water of: (ARO) 100% master aronia juice, (MIX) 25% master aronia juice + 75% juice reconstruct (without flavonoids), and (PLC) 100% juice reconstruct, and they were compared with a (CTL) control group on pure tap water. Biochemical analyses of plasma on Cobas c-111 analyzer showed a significant 20% decrease of Glu in ARO group in comparison to CTL. ChT was significantly higher in MIX and PLC in relation to both CTL and ARO groups, which arose mainly from LDL elevations. Also, there was a certain (30%), but insignificant increase of TG in MIX and PLC vs. CTL. The effects of aronia on transaminases were registered only for ALT, whose level in ARO was about 3-fold of that in CTL group. In conclusion, everyday free drinking of flavonoid-rich aronia juice solutions appeared to have global hypoglycemic effect in normal rats and, also, certain hypolipidemic effects, when hyperlipidemia was induced probably with higher sugar consumption.

Keywords: *Aronia melanocarpa*, plasma glucose, plasma lipids, transaminases, rats

The stimulant behavioral effects of anthocyanin-rich juice of *Aronia melanocarpa* in rats

PP3-14

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The fruits of *Aronia melanocarpa* are rich in anthocyanins, plant pigments with a number of registered beneficial effects on human health (e.g. antioxidative, anti-inflammatory, immunomodulatory). Some limited studies have also shown their effects on behavior and cognitive functions in experimental animals. This study was designed to explore the effects of unlimited consumption of diluted aronia juice on rat behavior. Young male Wistar rats were divided into control group (CTL; N=12) with tap water provided *ad libitum*, and 3 experimental groups (N=8) supplied with drinking solutions of 20% mixtures (m/m) in tap water: (ARO) 100% master aronia juice; (MIX) 25% master aronia juice + 75% placebo solution (juice reconstruct without flavonoids); (PLC) 100% placebo. Rats were being allowed to drink these solutions without limits for 34 days, where on

days 31-34 three behavioral tests were performed. These tests revealed that only ARO group exhibited significant behavioral changes: augmented locomotion in an open field test, anxiolytic-like action in elevated plus maze, as well as an increase in active swimming in forced swimming test (which is relevant to antidepressant-like action). These results suggest that everyday drinking of diluted aronia juice (between 6 and 12 g of master aronia juice daily per rat) with high flavonoid content (about 0.12%) for about a month, may induce several stimulant behavioral actions in experimental animals.

Keywords: *Aronia melanocarpa*, anthocyanins, behavioral tests, behavioral stimulant

Antibacterial activity screening of two inedible fungal species *Bjerkandera adusta* (Willd. ex Fr.) P. Karst. and *Trametes versicolor* (L.) Lloyd (1920)

PP3-15

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Due to the growing resistance of pathogenic bacteria to common antibiotics, detection of alternative sources of antimicrobial substances is very important in microbiological investigations, among which the fungi have been recently documented as one of the most potent agents. Since the selected species *Bjerkandera adusta* (Willd. ex Fr.) and *Trametes versicolor* (L.) Lloyd (1920) have not been previously tested against human pathogens, the aim of this study was to preliminarily screen their *in vitro* antibacterial activity at the extract level. The extracts were performed using 70% methanol (rotary shaker, 100 rpm; 72 h). The mentioned bioactivity was screened against seven human vaginal bacterial strains, five of which were Gram-negative (*Escherichia coli* I & II, *Proteus mirabilis*, *Proteus vulgaris* and *Pseudomonas aeruginosa*), while the remaining two were Gram-positive ones (*Staphylococcus aureus* I & II). The antibacterial activity was determined under *in vitro* conditions using microdilution assay in 96-well microplates, according to CLSI procedures. The extracts showed to be active against the majority of the screened bacterial strains, with the MIC values in the range from 5 mg mL⁻¹ to 20 mg mL⁻¹. The highest activity was actually observed against *S. aureus* I & II (MIC 5 mg mL⁻¹). Taken all together, it should be emphasized that the obtained experimental data are in a good accordance with the existing literature records. The further research work will be focused on *in vitro* screening of antibacterial activity of the examined fungal species at the extract level of various polarities.

Keywords: antibacterial activity, *Bjerkandera adusta*, *Trametes versicolor*, human pathogens

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