

BOOK OF ABSTRACTS

3rd International Conference on Plant Biology (22nd SPSS Meeting)



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

Faculty of Biology, University of Belgrade

**3rd International Conference
on Plant Biology
(22nd SPPS Meeting)**



9-12 June 2018, Belgrade

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Characterization of chemically modified pectins as novel material for various applications

PP4-18

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Pectin is a natural biopolymer contained in the plant cell wall. Ability of pectin to form hydrogels has been widely investigated for various purposes from food industry to biomedical applications. The goal of our study was to create modified pectin with improved gelling properties, that could produce stable covalently cross-linked hydrogels. Aromatic groups were introduced into the previously oxidized pectin chains in a reductive amination reaction with tyramine and cross-linking was achieved through enzyme reaction with soybean peroxidase in the presence of hydrogen peroxide. Characterization confirmed that a series of obtained tyramine-pectins (oxidized from 2.5 to 20 mol%) had different degrees of modification. UV spectra confirmed the presence of tyramine group with the absorbance peak at 275 nm. Chemical shifts of modified pectin in ¹H NMR spectra correspond to newly formed functional groups. The presence of C-C in-ring stretching vibrations peaks at 1518 and 1417 cm⁻¹ in FTIR spectra of modified pectin confirmed the presence of aromatic rings. Increased nitrogen percentage in elemental analysis and additional ionizable group on the titration curve of tyramine-pectin proved the introduction of positively charged amino group. Surface morphologies also showed certain differences under SEM-EDS. Tyramine-pectin has been successfully tested as a carrier for enzyme immobilization, but potential applications of this material could be in tissue engineering, drug delivery or wound healing.

Keywords: pectin, tyramine, hydrogel

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Antioxidative potential of high-altitude *Plantago atrata* plants

PP4-19

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Plants produce a large variety of metabolites that assure their antioxidant potential against the cell damaging effect of reactive molecules generated due to developmental and environmental factors. *Plantago atrata*, also known as mountain plantain, belongs to the *Plantaginaceae* family and grows as a high-altitude mountain perennial plant that is subjected to extreme conditions, including increased ultraviolet light, low temperature, etc. Because of its habitat, this plant could