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BOOK OF ABSTRACTS

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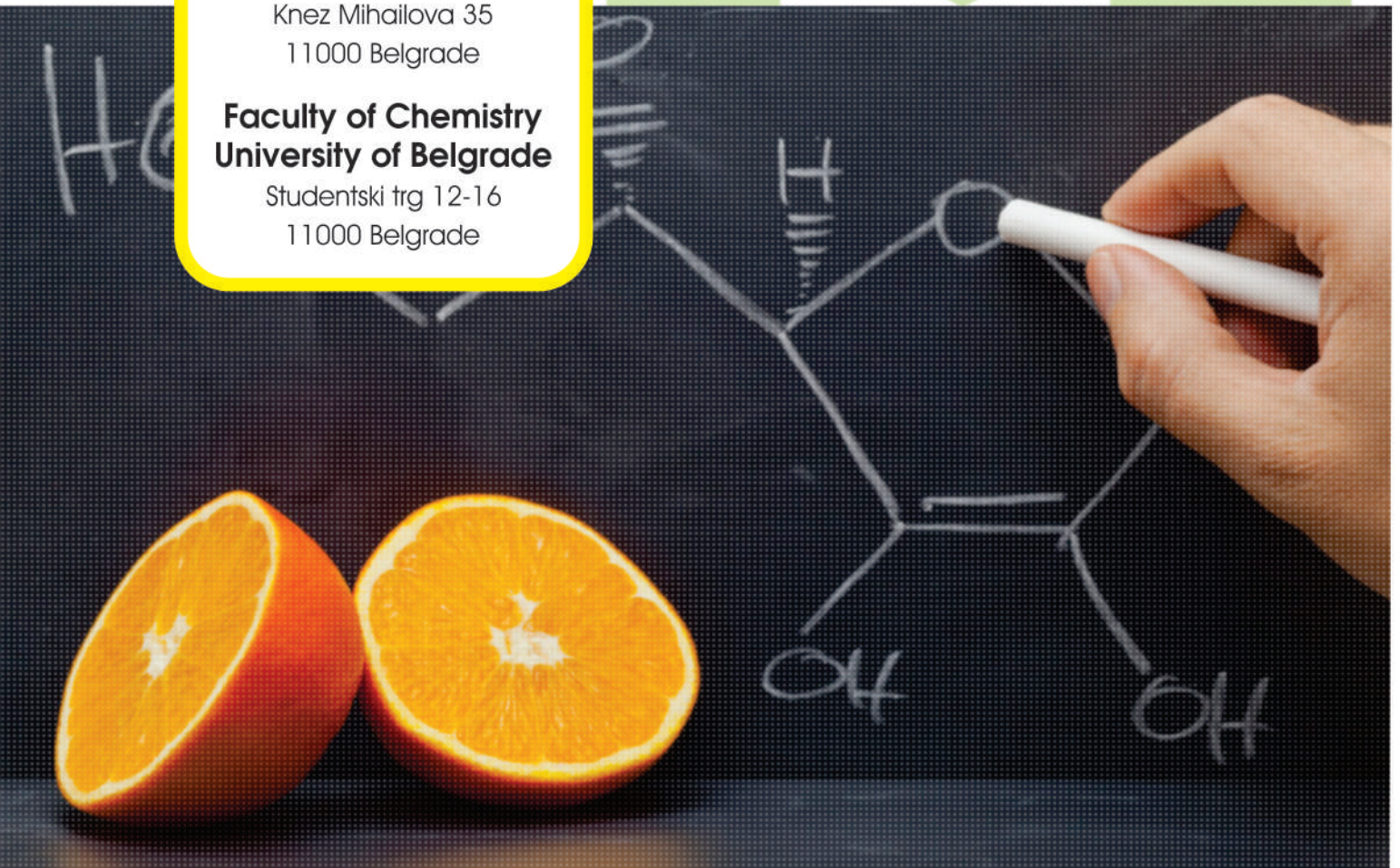

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HPTLC—MS/MS analyses of phenolic compounds in bee pollen botanically originated from *Hedera helix*

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Hedera helix L. (ivy) is an evergreen plant which blooms from September to November [1]. Although honeybees commonly collect flower pollen during the spring season, *H. helix* flowers serve them a valuable food source before winter. Beekeepers may collect bee pollen for human usage. Bee pollen was known as 'life-giving dust' in ancient times because of its valuable constituents including proteins, fats and carbohydrates. The proportion of these constituents well fit with the dietetic recommendations, so a human can live healthy only by eating bee pollen [2]. Additionally, it has a wide range of phenolic compounds which are responsible for its bioactivity as antioxidants as well as for its anti-inflammatory and antimicrobial properties etc.

This is the first report on HPTLC-MS/MS analyses of phenolic compounds in bee pollen that botanically originated from *Hedera helix*. It was found that pre-development of the plate was crucial for MS analyses to overcome the issues related to ion suppression. Therefore, HPTLC-MS/MS analyses were performed on twice pre-developed HPTLC silica gel plates F_{254} that were developed up to 7 cm with EtOAc-HCOOH-CH_3COOH-H_2O (10:1.1:1.1:2.6, v/v) [3] as a developing solvent in a saturated twin trough chamber. Natural product detection reagent was applied for post-chromatographic derivatization of one narrow part of the chromatographic zones that supported appropriate positioning of the elution head of the TLC-MS interface that was used to transfer the compounds from the chromatographic zones into the MS detector. The full MS spectra were scanned in the range of 100-2000 *m/z*. The ions which gave the most intensive signals were fragmented with 35% collision energy. The investigated bee pollen samples were obtained from Slovenia (Hrastnik) and Türkiye (Ordu). The analyses confirmed similar chemical profiles of the main phenolic compounds discovered in both bee pollen samples.

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Biocompounds from mushroom aqueous and polysaccharide extracts

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The application of mushrooms for medicinal purposes has a long history, primarily due to its therapeutic properties. Today, mushrooms are often used as functional food or natural sources in the development of various nutraceuticals. Using advanced instrumental techniques, it was shown that mushrooms are a good source of highly valuable polysaccharides (i.e., glucans), sterols (i.e., ergosterol), different antioxidants, proteins and peptides. However, due to the great diversity of fungi, additional research in this area should be performed. The aim of this study is to analyze biocompounds from polysaccharides and aqueous extracts of two different mushrooms (*A. bisporus* and *A. aegerita*). Mushroom extracts were prepared according to procedure previously desribed by Popović Minić (2023)[1]. Lyophilised mushroom powder was extracted with 80% methanol containing 0.1% HCl, after which the suspension was filtered through 0.45μm filters and used for further chromatographic analysis by UHPLC-QToF-MS. Chemical characterization of mushroom biomolecules was performed using exact mass (*m/z*) and MS^2 fragment ions of each detected compound and their retention times. The identified compounds represented four structurally distinct groups: 1) organic acids and their derivatives (7 compounds); 2) phenolic acids and their derivatives (11 compounds); 3) esters (28 compounds); and 4) other organic compounds (Gibberellin A1). Based on the obtained results, the differences between the tested samples can be clearly observed. In *A.bisposrus* and *A.aegerita* polysaccharide extracts only few organic acids and esters were detected, while phenolics and majority of esters were not recorded. On the other hand, the presence of organic acids, phenolic acids, esters and their derivatives was confirmed in both aqueous extracts. The highest number of detected compounds (as many as 41 compounds) was detected in the aqueous extract of *A. aegerita*. Among organic acids, fumaric, malic and citric acids were detected in all the mushroom extracts, whereas *p*-hydroxybenzoic acid, *m*-hydroxy-hydrocinnamic acid, sinapic acid, 2-(pentanoyloxy)benzoate, and 3-(11-hydroxyundecoxy) benzoate were detected among phenolic acids and their derivatives in aqueous extracts of both mushrooms. Regarding detected esters, following compounds were identified in the tested samples: 8-carboxyoctanoate, 3-(octyloxy)-3-oxopropanoate, 9,12,13-trihydroxyoctadecenoate, 13-hydroxy-9,11-octadecadienoate. The estimated profiles of biocompounds present in mushroom extracts can contribute to the further understanding of their antioxidant and biological properties.

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