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BOOK OF ABSTRACTS

*XII International Scientific
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RAMAN SPECTROSCOPIC STUDY OF SUGARS IN SUNFLOWER HONEY SAMPLES FROM ČESTEREG (VOJVODINA, SERBIA)

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Abstract

Monofloral sunflower honey was harvested from the enchanting vast sunflower fields in the vicinity of Cestereg (Central Banat) serving as a rich source of floral nectar collected by honey bees. The aim of the study was to detect predominant sugars such as glucose, fructose, sucrose and maltose in sunflower honey of known origin using Raman spectroscopy. The Raman spectra were recorded with XploRA Raman spectrometer from Horiba JobinYvon, on laser at a wave length of 785 nm. Several vibrational bands at 415, 514, 564, 622, 703, 769, 815 cm^{-1} , followed by 856, 914, 964, 1021, 1067 and 1123, 1260, 1360 and 1455 cm^{-1} could be identified as fingerprints of the major sugar constituents of honey, fructose and glucose, whereas sucrose and maltose bands have been suppressed. The highest intensity band at 415 and its shoulder at 446 cm^{-1} are attributed to the C–C–O vibration of α - and β - glucose, respectively. The higher intensity signals at 514 cm^{-1} could be assigned to the skeletal vibration of glucose and 622 cm^{-1} to the ring deformation of fructose, due to its highest content in the honey sample. Finally, the bands at 1123, 1260, 1360 and 1455 cm^{-1} were related to the C-O-H deformation of the glucose and sucrose, C-O-C cyclic alkyl ethers of the fructose, CH and OH bending modes of the glucose and sucrose and the symmetric deformation mode of CH_2 in fructose, respectively. This study confirmed that Raman spectroscopy can be applied for rapid determination of sugar contents of commercial honey.

Keywords: *sunflower honey, glucose, fructose, Raman spectroscopy.*

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