#### Natural resources green technology & sustainable development



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- BP2 Nataša Mikulić, Ksenija Marković, Nada Vahčić: Quality parameters of different types (honeydew, floral, chestnut, meadow, amorphous, mandarin, willow, wild cherry, forest, linden, sage) of honey

P3	Natka Ćurko, Anita Pušek, Ana Jurinjak Tušek, Marina Tomašević, Katarina Lukić, Mihaela Šmic, Ivana Radojčić Redovniković, Karin Kovačević Ganić: Application of supercritical Co <sup>2</sup> as green technology for oil extraction from Graševina
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- P11 Ana Bego, Filipa Burul, Maja Jukic Spika, Marijana Popović, Tonka Ninčević, Marija Mandušić, Jakša Rošin, Marin Čagalj, Mirella Žanetić, Katja Žanić, Slavko Perica, Valerija Dunkić, Marija Nazlić, Tanja Gotlin Čuljak, Elda Vitanović: New methods in olive pests controlling using plant volatiles
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#### Session C <sup>Friday,</sup> 16th September 2022

#### SEPARATION OF BIOACTIVE COMPOUNDS FROM MANDARIN PEEL Citrus unshiu USING SUBCRITICAL WATER EXTRACTION

SILVIJA ŠAFRANKO\*, MARIJA BANOŽIĆ, INA ĆORKOVIĆ, MARTINA JAKOVLJEVIĆ, KRUNOSLAV ALADIĆ, STELA JOKIĆ Faculty of Food Technology, Josip Juraj Strossmayer University of Osijek, Osijek, Croatia \* silvija safranko@ptfos.hr KEYWORDS: bioactive compounds, byproducts, citrus peel, supercritical/ subcritical extraction

Mandarin peel contains significant amounts of bioactive and high-value components, among which phenolic acids and flavonoids are the most persistent groups of plant phenolics exhibiting healthrelated properties including antioxidant, anticancer and anti-inflammatory. Subcritical water extraction (SWE) technique is considered as an promising green alternative to conventional extraction methods, being also efficient for extraction of variety types of bioactive compounds from plant material. The efficiency of supercritical CO2 (SC-CO<sub>2</sub>) extraction for obtaining high-guality essential oil from citrus peel is well-known, however the utilization of generated remain free of non-polar components is not commonly studied for obtaining extracts rich in phenolic compounds. The primary aim of this study is to investigate the possibility of using mandarin peel of the Citrus unshiu variety using subcritical water extraction (SWE) technique, and to evaluate phytochemicals, total phenolic content and antioxidant activity of the prepared extracts. After SC-CO2 extraction, the exhausted citrus waste was subjected to SWE in a wide temperature range (130 – 220  $^{\circ}$ C) using solvent-solid ratio (10 – 30 mL/g) in periods from 5 to 15 min. Identification and quantification of individual bioflavonoids, of which hesperidin (0.16 - 15.07 mg/g of plant) was determined as the most abundant flavanon in mandarin peel, and also other polyphenolic compounds as possible products of thermal degradation, was performed using high performance liquid chromatography with a diode array detector (HPLC-DAD). At higher temperatures the presence of 5-HMF and chlorogenic acid was detected. Antioxidant activity and total phenolic content in extracts were determined using spectrophotometric methods. Process optimization was performed by response surface methodology (RSM) using Design Expert® software. Acknowledgments: This work has been supported by Croatian Science Foundation under the project

"Application of innovative techniques of the extraction of bioactive components from by-products of plant origin" (UIP-2017-05-9909).