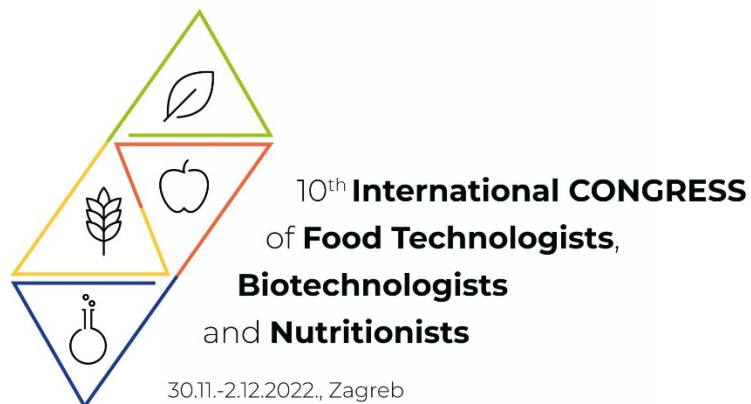


BOOK OF ABSTRACTS

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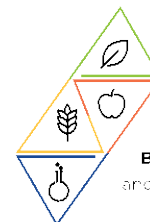


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Enzyme-assisted extraction of various bioactive components from blackcurrant (*Ribes nigrum*)

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Poster presentation, presenting author Milica Veljković; mveljkovic@tmf.bg.ac.rs

According to experts, berries are a major source of phytochemicals, disease-fighting components, which can help to boost the immune system and lower the risk of many aging-related conditions. The simplest way to isolate these compounds is through solvent extraction. However, this method is not entirely successful since, in addition to free phytochemicals, there are also significant amounts of bound components that are trapped in the cell wall. For these reasons, the addition of enzymes such as cellulases and pectinases provides the hydrolysis of the cell wall, facilitate the release of molecules and increase the extraction yield of phytochemical. Therefore, in this work, enzyme-assisted extraction of lyophilized blackcurrant (LCR), a fruit that is increasingly used for pharmaceutical and cosmetic purposes, was examined. Extraction was performed in acetate buffer pH 4.5, at 50° C using four enzymes: Pectinex® Ultra SP-L, Viscozyme® L, Cellic® CTec3, Rohapect® MC. In the first step of the experiment, the extraction was optimized by different-time varying, from 10 to 120 min, and after choosing the optimal time, the influence of the solid-liquid ratio (1:4, 1:10, 1:40) on the extraction efficiency was examined. The progress of extraction was monitored spectrophotometrically, through antioxidant properties, the total content of polyphenols, flavonoids, and phenolic acids from all blackcurrant extracts and compared to the control (extract without enzyme). Regarding the total content of polyphenols, it was revealed that 60 min was the optimal extraction time. On the other hand, it was found that

for a solid-liquid ratio of 1:4, all results were about 1.5 times higher than the control values. In terms of enzymes, Viscozyme® and Pectinex® Ultra SP-L enabled the recovery of the highest total phenolic content (~28 mg GAE/g LCR) and phenolic acids (~3 mg CA/g LCR), while, on the other hand, Rohapect® MC enhanced the extraction of antioxidants (FRAP 380 $\mu\text{mol Fe}^{2+}/\text{g LCR}$), as well as total flavonoids (2.85 mg QE/g LCR). Obtained results open new possibilities for blackcurrant extracts treated with different enzymes as value-added ingredients for the cosmetic and food industry.