

12^{do} hranom zdravlja with food to health



Book of Abstracts of the 12th International
Scientific and Professional Conference
WITH FOOD TO HEALTH

Knjiga sažetaka s 12. međunarodnog
znanstveno-stručnog skupa
HRANOM DO ZDRAVLJA



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APPLICATION OF DEEP EUTECTIC SOLVENTS IN EXTRACTION OF BIOACTIVE COMPOUNDS FROM FOOD INDUSTRY BYPRODUCT - COCOA BEAN SHELL

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This is the first report on the extraction of cocoa bean shell (CBS) using deep eutectic solvents (DESs) followed by microwave extraction. CBS was extracted using 16 different choline chloride based DESs at temperature of 50 °C during 60 minutes, with 10% and 50% water addition. Identification and quantification of bioactive compounds in obtained extracts was performed by high performance liquid chromatography (HPLC) with diode array detection. The screening results showed that the extracted amount of active compounds (methylxantines and some polyphenols) varied greatly depending on the used solvent. DES choline chloride:oxalic acid was the most suitable solvent for the extraction of active compounds from CBS. The DES extraction was then coupled with microwave-assisted extraction (MAE), for the comparison and the optimisation was performed by response surface methodology (RSM). Antioxidant activity was also determined using DPPH method. The statistical results showed that water content significantly influenced the extraction of targeted active compounds from CBS, while extraction time and temperature did not show statistically significant influence. The study demonstrated how extraction using DES and microwaves could be of a great importance in the future trends of green chemistry for the production of CBS extracts rich in bioactive compounds.

Keywords: cocoa bean shell, waste, deep eutectic solvents, microwave assisted extraction, active compounds