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VISOKOTLAČNE TEHNOLOGIJE KAO EFEKTIVNE ZELENE METODE ZA EKSTRAKCIJU KAKAOVE LJUSKE

HIGH-PRESSURE TECHNOLOGIES AS PROMISING GREEN METHODS FOR EXTRACTION OF COCOA SHELL

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poster/ poster

Cocoa shell represents a waste from the industrial production of cocoa and chocolate. However, it attracts a lot of attention because it is rich in valuable compounds. Re-use of cocoa shell won't increase only profitability and avoid environmental pollution, it could also found application in cosmetic, pharmaceutical and food industry due to its antioxidant, antimicrobial, anti-ageing, anti-radical and anticarcinogenic properties. Different methods were used for extraction of cocoa shell, but the data related to the use of green separation techniques are limited in the literature. Therefore, the aim of this work was to use both green-based and conventional extraction methods in order to compare results. Supercritical CO₂ extraction was performed at pressures of 200 and 300 bar and at temperatures 40, 60 and 80 °C. Subcritical water extraction was carried out in a batch reactor at temperatures of 170 °C and 220 °C. Soxhlet extraction with hexane and extraction with 50 % acetone were also performed. Total phenol content, total proanthocyanidin content and antioxidant activity of extracts were determined. Besides phenolic compounds, some extracts contained high amounts of theobromine, followed by caffeine and theophylline. Furthermore, subcritical water extracts were rich in sugars and their derivatives. Fatty acids were also obtained using supercritical CO₂ and Soxhlet extraction of cocoa shell and were analysed by gas chromatography.

Keywords: cocoa shell, extraction, subcritical water, supercritical CO₂.

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