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MICROWAVE-ASSISTED EXTRACTION OF ANTIOXIDANTS FROM THE AREAL PARTS OF CANNABIS AND PROCESS MODELLING

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Nowadays, cannabis (*Cannabis sativa* L.) is one of the most controversial medicinal plants. The usage of cannabis and its derived products is based on the biological activity of the present pharmacologically active compounds; firstly cannabinoids and then many others: phenols, terpenoids, fatty acids, tocopherols. Today, cannabinoids are in the focus of scientific and medical research. That is why this research was focused on phenols and other bioactives in cannabis.

Microwave-assisted extraction was applied for the extraction of phenolic compounds from areal parts of cannabis, sort Helena. The effects of different extraction parameters (ethanol concentration (30-70 %), extraction time (10-30 min), and liquid/solid ratio (5-15 mL/mg)) on the extraction yield, total phenols, total flavonoid content, antioxidant activity, and reductive capacity were investigated as part of the analysis of the extraction process. Box-Behnken's design was chosen as the experimental design. The content of total phenols in extracts was from 10.34 to 15.79 mg EGK/g of the drug and the content of total flavonoids was from 4.97 to 9.68 mg CE/g of the drug. The experimental results were described by the second order polynomial model. The model was estimated using the analysis of variance (ANOVA). The optimization process was carried out for all parameters simultaneously, to obtain the maximum yields of polyphenol compounds, antioxidant activity, and reductive capacity.

Keywords: Cannabis sativa, microwave-assisted extraction, phenols, antioxidants