Agricultural Journals

Czech Journal of
FOOD SCIENCES

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Table of Contents

Czech J. Food Sci.

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Effect of drying method on the phenolic content and antioxidant capacity of spearmint

The changes in total phenolics, hydroxycinammic acid derivatives, and antioxidant properties of spearmint after five drying treatments (convection oven drying, freeze-drying, microwave drying, and air drying with the sun exposure and without the sun exposure) were investigated. Phenolic composition of dried spearmint was analysed by spectrophotometric assays, while DPPH radical scavenging activity and Ferric reducing/Antioxidant power (FRAP) assay was used to measure the antioxidant properties. The results showed that freeze drying produced dried spearmint that had the highest total phenolics (34.6 ± 1.9 mg/g) content and the most potent antioxidant capacity (126.2 ± 0.4 mg/g for FRAP and 88.1 ± 5.9 mg/g for DPPH,

respectively). On the other hand, spearmint that was dried by convection oven and microwave drying presented the lowest amount of phenolic compounds (12.0 $\pm$ 0.5 mg/g) and antioxidant potency (49.3 $\pm$ 0.7 mg/g for FRAP and 26.9 $\pm$ 1.6 mg/g for DPPH, respectively). This might be attributed to the fact that heat-sensitive phenolics were degraded or biotransformed at high temperatures. The loss of phenolic compounds and antioxidant activity reached up to 60% compared to freeze drying.

Keywords:

air-drying; freeze-drying; hydroxycinammic acid*; Mentha viridis*; microwave drying; phytochemical

[fulltext]