INVESTIGATION OF THE EFFECT OF OHMIC HEATING ASSISTED EXTRACTION METHOD ON BEE POLLEN BIOACTIVE COMPONENTS

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THESIS ABSTRACT

In this study conducted with bee pollen collected from different regions of Turkey, it was aimed to determine the regional differences in terms of bioactive components using traditional and innovative extraction methods. For this purpose, total phenolic, total flavonoid and antioxidant capacity contents of the samples and phenolic and flavonoid substance profiles were investigated using liquid chromatography tandem mass spectrometry (LC-MS/MS). Optimum extraction parameters were determined according to Box-Behnken experimental design by using surface response method in the extraction of bioactive components from bee pollen by ohmic heating. Bioactive components from bee pollen were also extracted by ultrasonic and microwave methods and their combinations with ohmic heating (ohmic assisted ultrasonic and ohmic assisted microwave) and all these methods were compared with the traditional extraction method of maceration and the differences were revealed.

APPLICATION AREAS OF THE THESIS RESULTS

The high phenolic and flavonoid content in bee pollen constitutes an important source for the development of food supplements and natural health products. Furthermore, the antioxidant capacity of these components can be utilised in the food industry to extend shelf life and increase nutritional value. Innovative extraction methods such as ohmic heating, ultrasonic and microwave, when integrated into industrial processes, provide less energy and time consumption for sustainable production and contribute to the efficient use of natural resources. In this way, an efficient extraction of bioactive components becomes possible.

ACADEMIC ACTIVITIES

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KEY WORDS

- ✓ Bee pollen
- ✓ Phenoliv compounds
- ✓ Extraction
- ✓ Ohmic heating
- ✓ Ultrasonic
- ✓ Microwave
- ✓ Optimization

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