

Abstract

In this research, response surface methodology was used for the development of a microwave-assisted extraction method for determination of target element (Zn, Cu, Fe, Mn, Co and Ni) in bean seed samples by flame atomic absorption spectrometry (FAAS). For this method, Box-Behnken experimental design was used for optimizes the process variables including power, temperature, time and volume of nitric acid. A multiple response function (R_m) was applied to describe the experimental conditions for simultaneous extraction of the target element. Optimum conditions were 300.0 (W), 97.0 °C, 24.6 min and 6.7 mL for power, temperature, time and volume of nitric acid, respectively. High regression coefficient between the variables and the response ($R^2 \approx 0.991$ for multiple response function) indicated excellent evaluation of experimental data by polynomial regression model. The developed procedure was then applied to the extraction and determination of these elements in the some bean seeds samples.

Key Words: Bean; Response surface methodology; Microwave-assisted extraction; Box-Behnken design.



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Subject:
**Determination of Nickel, Cobalt, Iron, Manganese, Zinc and
Copper in Red Bean (*Phaseolus Vulgaris*) by Microwave
Assisted Extraction**

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