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## Green and white method for the determination of selected essential and toxic elements in vegetable and meat-based samples by small-sized electrothermal vaporization capacitively coupled microplasma optical emission spectrometry and combustion-assisted digestion

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The determination of essential and toxic elements, such as Se, Zn, Cu, Cd, Hg and As, using green sample preparation techniques coupled with miniaturized instrumentation, is a critical research focus in the field of analytical methods development. Thus, the aim of this study was the development of a green and white method based on oxygen flask combustion of the sample, and detection by optical emission spectrometry using small-sized electrothermal vaporization capacitively coupled microplasma optical emission spectrometry. The microsample (10 µL) was vaporized from a small-sized Rh-coiled filament, while the low power (15 W) and low Ar consumption (150 mL min<sup>-1</sup>) microplasma was used as excitation source and a lowresolution microspectrometer was used for recording the multielemental spectrum. The combustion method, as a greener alternative to wet acid digestion, involved weighing 50-100 mg sample, wrapping it in a small ashless filter paper, and placing it in a platinum basket. The sample was then combusted in an oxygen-filled Erlenmeyer flask, and the combustion gas was absorbed in a volume of 10 mL 0.1 mol  $L^{-1}$  HCl solution. In order to verify the effectiveness of the combustion-based digestion, the samples were microwave-assisted digested in concentrated HNO<sub>3</sub> - H<sub>2</sub>O<sub>2</sub> mixture. The accuracy (recovery and precision) of the method was evaluated by analyzing several certified reference materials (CRMs), using both external calibration and standard addition method. The recovery degrees were in the range of 90-112% and 98-113% for external calibration and standard addition method, respectively, while the precision, expressed as relative standard deviation, was in the range of 4.8-14.5% and 4.6-13.3%. The results were similar to those obtained by microwave classical digestion, with recovery and precision in the range of 91–111%, and 6.7–13.7%, respectively.

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