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COMPARISON OF DIFFERENT PROCEDURES FOR THE DETERMINATION OF ELEMENT BIOACCESSIBILITY IN AYURVEDIC FORMULATIONS

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The knowledge of the bioavailability and bioaccessibility of elements in foods, food supplements and medicines is very important to assess the potential health hazard associated to their consumption, since not all the amount of an element present in an ingested product is available for absorption by the organism. Oral bioaccessibility is the fraction of a compound that is released from its matrix in the gastrointestinal tract and thus becomes available for intestinal absorption [1]. It is determined *in vitro* by extraction with solutions simulating gastric and intestinal fluids and provides a precautionary estimation of bioavailability, since the extracted substance might not be completely absorbed. In this work we have determined the total and bioaccessible concentrations of Al, As, Ba, Cd, Cu, Fe, Hg, Ni, Pb and Zn in a suite of ayurvedic products belonging to the *rasausadhi* tradition, which relies on the deliberate combination of herbs, metals and minerals; the products were purchased in India and are not available in the UE, where only metal-free ayurvedic products are admitted. The work is the prosecution of a previous study dealing with other Ayurvedic products [2]. In the present research we have put the samples in contact with the extractants in different ways, to investigate the effect of experimental conditions on extractability: i) the samples were simply poured into the liquid; ii) they were mixed with *ghee*, the Indian butter, according to the traditional way of assumption of ayurvedic products; iii) they were suspended in the liquid with the aid of a semipermeable membrane. Concentrations were determined by Inductively Coupled Plasma-Optical Emission Spectroscopy (ICP-OES) after microwave digestion. The results showed that bioaccessibility decreased using the second and third procedure. Bioaccessible concentrations were lower than total concentrations and extractability was higher in synthetic gastric fluids than in intestinal ones.

References

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