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Transition rates of selected metals determined in various types of teas (*Camellia sinensis* L. Kuntze) and herbal/fruit infusions

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Highlights

- Majority of transition rates of metals determined for tea/herbal infusions are well below 100%.
- Default values for transition rates are proposed for aluminium, cadmium, copper and lead.
- Default values for transition rates should be considered in exposure assessments.

Abstract

Teas and raw materials used as ingredients of herbal and fruit infusions (HFI) were analysed by means of ICP-MS for their content of aluminium, arsenic, cadmium, copper, lead and mercury in the dry product and in the infusion. Samples of tea (*Camellia sinensis* L. Kuntze) were selected to include different origins, types (black, green), leaf grades (whole leaf, broken, fannings, dust) and manufacturing techniques (orthodox, "crush, tear, curl"). The selected HFI raw materials (chamomile, elderberries, fennel, hibiscus, mate, peppermint, rooibos and rose hip) cover the most important matrices (flower, fruit, seed, herb, leaf) and reflect the economic significance of these HFI materials in trade. Infusions were prepared under standardised conditions representing typical household brewing.

Transition rates for the investigated metals vary significantly but are mostly well below 100%. We propose default transition rates for metals to avoid overestimation of exposure levels from tea/HFI consumption.

Keywords

Metals; Herbal infusions; Transition rate; ICP-MS; *Camellia sinensis*; *Aspalathus linearis*; *Foeniculum vulgare*; *Hibiscus sabdariffa*; *Ilex paraguariensis*; *Matricaria camomilla*; *Mentha* × *piperita*; *Rosa spec.*; *Sambucus nigra*; Tea; Aluminium; Arsenic; Cadmium; Copper; Lead; Mercury

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