

160

CADMIUM DETERMINATION BY ETAAS IN PROTEIC FRACTIONS OF SERUM SEPARATED BY ACETATE CELLULOSE ELECTROPHORESIS.

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Cadmium (Cd) is a ubiquitous heavy metal, prevalent as an environmental contaminant. In the general population, exposure to Cd occurs primarily through dietary sources, cigarette smoking, and, to a lesser degree, drinking. The aim of this work was to perform a sensitive and accurate method for Cd determination in serum protein fractions obtained by acetate cellulose electrophoresis, by an on-line system coupled to electrothermal atomic absorption spectroscopy (ETAAS). Albumin, alpha-1, alpha-2, beta, and gamma-globulins fractions were cut and collected in separated free metals-tubes, then were dissolved with acetic acid (80%) and homogenized. Aiming to optimize the overall analysis time, the discontinuous nature of ETAAS was synchronized with the continuous mode of the flow injection-solid phase extraction (FI-SPE). Cd was preconcentrated through a conical carbon nanotubes mini-column, and eluted with a discrete volume of nitric acid, placed directly into the platform of a L'Vov tube. Our results showed that Cd levels were below detection limits in the majority of proteins fractions and only gamma-globulins had detectable levels of Cd. Good accuracy was achieved using the proposed FI-SPE-ETAAS method. This procedure joined the excellent sensitivity attainable by ETAAS with the simplicity of protein separation by acetate cellulose electrophoresis.

161

ASSESSMENT OF TOXIC ELEMENTS IN AMARANTH SEEDS

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In the recent years, amaranth (Amaranthaceae) has been proposed as new food due to its nutritional properties (i.e. aminoacid, protein, lipidic and carbohydrates contents). However, the determination of toxic elements has been less studied in amaranth seeds. For this reason, the concentration of As, Cr and Pb was determined in three species of amaranth seeds: *A. hypochondriacus*, *A. cruentus* and *A. dubius*, which were harvested in Argentina (provinces of La Pampa and San Luis). The determinations were carried out by inductively coupled plasma optical emission spectroscopy (ICP-OES). Evaluation of accuracy was carried out by standard addition method. The results show that, for the three species, Cr and As are present in low concentration. However, the concentration of Pb was high, at least two times the maximum allowed value ($10 \mu\text{g g}^{-1}$) by the World Health Organization (WHO). As a conclusion, the high concentration of Pb present in amaranth seeds from Argentina, indicates that Pb determination should be considered in these amaranth species to avoid undesirable consequences for the human health in the population that consumes these seeds.