DETERMINATION OF Se(IV) SPECIES IN SOME ENVIRONMENTAL SAMPLES BY HGAAS

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The chemical generation of volatile hydrides with tetrahydroborate is a well-established sample introduction technique in atomic spectrometry, when low detection limits are required (1). An important advantage is related to the analyte separation from the matrix components, offering considerable suppression of matrix effects (2). The knowledge of Se concentration in environmental samples is important because this element may be both toxic and nutrient for live organisms. Because of its presence and involvement in various biological activities, reactions and high mobility as both inorganic and organo-metallic compounds (3). The purpose of this study was to estimate total selenium concentration in Helianthus annuus L. collected from Thrace region in growing Turkey by hydride generation atomic absorption spectrometry (HGAAS), prior to microwave assisted acid. The accuracy of the techniques was evaluated by using certified reference material NIM-GBW07404 (GSS-4) and WEPAL-IPE-168 for soil and sunflower plant. The precision of the techniques, expressed as relative standard deviation, was observed under 8 % for HGAAS measurements. For first year (August-September 2010), the average concentrations of selenium(IV) in Helianthus annuus L., collected from different regions were found 0.28±0.15 mg/kg in soil, 0.32±0.10 mg/kg in root and 0.41±0.08 mg/kg in plant and the average results of second year (August-September 2011) were found 0.67±0.16 mg/kg in soil, 0.67±0.24 mg/kg in root and 0.96±1.41 mg/kg in plant. In this study, concentration of Se was found to be lower than the allowable maximum limits in soil according to Soil Contamination Control Administration.

KEYWORDS: Helianthus Annuus L., HGAAS, Se (IV) species

REFERENCES: