Thesis Title Analysis of Lead by Stripping Voltammetry and Atomic Absorption Spectroscopy

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Abstract

A comparison has been carried out of the analysis of lead in powdered milk by anodic stripping voltammetry and atomic absorption spectroscopy. Anodic stripping voltammetry was carried out without prior acid digestion of the sample, while atomic absorption spectroscopy was carried out on wet samples digested with nitric acid. For the voltammetric method, some complexing agents were added to the milk and the solution pH adjusted to 4.6 for EDTA and 10.0 for EGTA to release the lead as free lead ion. From analysis by the standard addition method, the amounts of lead detected were found to be 3.22 ug/g and 2.80 ug/g of powdered milk using EDTA and EGTA respectively. The percentage recoveries of the added lead for both complexing agents were found to be 94 %. The precision for both agents, expressed as percentage relative standard deviations, varied with the concentration of lead as: 1.79-4.82 % at 2.07 ppm 1.59-3.24 % at 4.14 ppm 3.01-7.80 % at 8.28 ppm 2.14-5.96 % at 12.4 ppm and 1.55-5.18 % at 16.6 ppm of lead. The results were in good agreement with those obtained by the atomic absorption spectroscopy method.