

18th International Conference on

Pure and Applied Chemistry

August 31- September 01, 2018 | Toronto, Canada

Development and optimization of a simple, cost effective and efficient analytical procedure for use in the analysis of Arsenic, Antimony, Selenium and Mercury by Vapor Generation and Flame Atomic Absorption Spectroscopy

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Seafood is the most significant source of toxic heavy metals Arsenic (As), Antimony (Sb), Mercury (Hg), Selenium (Se), Lead (Pb) and Cadmium (Cd) in the human diet. Fish is an essential part of the diet of the people of the Caribbean islands and is among their main source of dietary protein consumed at a rate of 25.9 Kg per capita annually. The objective of this research is to develop and optimize a cost-effective and efficient method for the analysis of As, Sb, Hg, Se, Pb and Cd in large quantities of fish muscle samples. Heavy metals pose the single largest risk to fish consumption and particularly in the Caribbean region where marine pollution can be influenced by both regional and extra-regional factors. The heavy metals analyzed in this study are among the most toxic of the heavy metals and analysis is quite challenging to analytical chemists. Parameters such as digestion media, sample digestion conditions, instrument conditions, reagents, tubing and flow rates were optimized and the most efficient parameters utilized to produce a low cost, a sensitive method that meets the needs of high volume and high throughput analyses.

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