Methylmercury and inorganic mercury determination in fish by cold vapour generation atomic absorption spectrometry

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RESUMEN:

Given that organic mercury is more dangerous than the inorganic form and that it is converted into methylmercury by biological methylation, we have studied and optimized a simple method for measuring both organic and inorganic mercury contents in fish, using a spectroscopic vapour generation technique, with a sequential reduction of the digested sample with stannous chloride and sodium tetrahydroborate. Prior to applying the method the sample was subjected to alkaline wet digestion. Due to the matrix interferences calibration curves with matrix addition were needed for mercury determinations. The analytical parameters of the method were: linearity from 10 to 200 ng of Hg in the reduction vessel; detection limit: 125 and 183 ng/g fresh sample for inorganic mercury and methylmercury, respectively; precision (RSD%): 9.8 and 10.1 for inorganic mercury and methylmercury, respectively; accuracy: reference material (Dorm-2-NRC-CNRC) for methylmercury; value found 4504±272 ng/g; certified value 4470±320 ng/g. The method offers the advantage of not requiring special equipment to measure inorganic and organic mercury simultaneously in a sample. To evaluate its usefulness it was applied to nine different types of fish and mussels.

Key words:

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