

Speciation of mercury and organomercury compounds by high performance liquid chromatography / electrospray ionization mass spectrometry

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The analytical methods used to study mercury speciation usually involve a separation step followed by element specific detection as ICP-MS. However, it does not provide structural information and can only identify the mercury species by retention times of standards in spite of increasing sensitivity. In this study, an analytical method for determination of mercury species was applied by HPLC/ESI-MS and validated by analyzing certified reference materials (DORM-2 and TORT-2). The extraction of mercury species in CRM was employed by adding 50 mL aqueous 1% L-cystein•HCl•H₂O followed by heating for 120 min at 60°C in glass vials. The extract was separated by a reversed phase of C₁₈ (150 mm × 1 mm, 5 μ) with a mobile phase of 0.1% L-cysteine in H₂O (w/v) at flow rate of 50 μL/mL. In an ESI positive mode, mercury species were identified with mercury isotope distributions and pseudo-molecular ions. And their determinations were applied with a selected ion monitoring (SIM) in order to improving sensitivity and to minimizing effects of the matrix.