DETERMINATION OF VANADIUM IN LIVER

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ABSTRACT

Introduction: Vanadium and its compounds are widely used in industry in the production of special vanadium-iron steels used for the manufacture of high speed mechanical tools, in hard metal production, in glass industry. Vanadium pentoxide, a potentially dangerous chemical pollutant has been used as a component of air-pollutants particularly in urban areas.

Material and Methods: The aim of the study was to elaborate and optimize a method of vanadium determination, and utilization of this method to determine the vanadium concentration in autopsy material — human liver from the region of Gdańsk. Samples were prepared by acid dissolution involving nitric acid and hydrogen peroxide. The vanadium content in the investigated material was determined by electrothermal atomic absorption spectrometry.

Results: The recovery of vanadium from reference material (TORT-2) was almost 100%. The correlation factor of the calibration curve was $R = 0.9995$. Based on analyses of the reference material it can be assumed that the presented method of vanadium determination in biological material is reliable for concentrations above 1 ng/g.

Conclusions: The developed method could be recommended for vanadium determination in human tissues. Vanadium concentration in the majority of examined samples of human liver were below the detection limit.

Key words: Vanadium in human liver, ETAAS, Graphite furnace, Ultratrace metal analysis

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