THE DETERMINATION OF THALLIUM IN BIOLOGICAL FLUIDS AND TISSUES

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ABSTRACT

The biological material to be analyzed is ashed with nitric and sulfuric acid. The sample is then transferred to a 250 ml beaker and diluted to 25 ml with water. Five ml of a 1 percent sodium bisulfite solution are added, followed by an excess of precipitating solution (10 ml of 1 percent bismuth nitrate, and 2 grams of potassium iodide in 90 ml water). Filter through a No. 3 Jena sintered glass filter, and wash the precipitate with 3 5-ml portions of washing solution (100 ml of concentrated sulfuric acid, 100 ml of 1 percent sodium bisulfite solution, 100 ml of precipitating solution, and 300 ml of water). Rinse out the filter flask and dissolve the precipitate through the filter with a freshly prepared solution containing 2 ml of concentrated sulfuric acid, 5 ml of 1 percent sodium nitrate solution, and 25 ml of water. Transfer the filtrate to a 250 ml beaker and boil until colorless, to remove iodine. To the hot solution, add 5 ml of a 1 percent sodium bisulfite solution, allow to stand one minute, and boil to remove sulfur dioxide. Cool and transfer to a glass-stoppered Erlenmeyer flask. Add concentrated hydrochloric acid so that the final concentration of acid will be 10-12 percent. Add 3 ml of chloroform, and titrate with N/100 potassium iodate. Quantities of reagents given apply to amounts of thallium ranging from one to ten mg. The method shows an accuracy of 2 percent in this range.

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[1]The authors were assisted by a grant from the Research Appropriation of the University of Oklahoma School of Medicine.