DETERMINATION OF IODINE IN ASSORTED SAMPLES USING ENERGY-DISPERSIVE X-RAY FLUORESCENCE ANALYSIS (EDXRFA).

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A B S T R A C T.

A method for the analysis of iodine in biological and other samples was developed. After digestion of the sample with chromic acid, iodine was precipitated from the sample as palladium iodide by the addition of a solution of palladium chloride. The precipitate was analysed using X-ray Fluorescence Analysis (XRFA), with ^{241}Am (114 mCi) as the excitation source. The technique was found to be sensitive to concentrations as low as 10 part per billion (ppb) or 1.0 microgram per decilitre (µg/dl). The samples analysed were; urine (102), water (5), cooking and table salt (13).

The data for the urine samples indicate a median urine iodine concentration in the range 2.5 - 3.0 µg/dl, much lower than the safe value of 5.0 µg/dl. 66% of the sample population had iodine content lower than 5.0 µg/dl.

Water samples had iodine content lower than 0.4 µg/dl. For a goitre-free area, the water iodine content should be at least 1.5 µg/dl.

Salt samples were found to have iodine content much lower than that labelled by the manufacturers.