CAPSULES
preliminary notes and applications from Bioanalytical Systems, Inc.

Determination of Iodide in Serum

Purpose
Detection of iodide in serum.

Serum iodide is determined primarily for thyroid function evaluation. Inorganic iodide is utilized by the thyroid gland to form compounds with hormonal activity. Elevated serum iodide can result from exposure to a number of environmental or medical sources of iodide. This can interfere with diagnostic tests of thyroid function or may lead to thyroid disorders.

Existing Methods
Precipitation of protein-bound iodide and digestion of the residue by dry-ashing or wet digestion. Requires extensive sample preparation and specialized equipment, and is very time consuming. Few laboratories perform this assay due to its complexity.

Notes
LCEC offers a rapid and accurate alternative method. 25-30 samples per day can be prepared and their iodide content determined.

Reference
HPLC Determination of Iodide in Serum Using Paired Ion Chromatography with Electrochemical Detection, W.J. Hurst, J.W. Stefovic and W.J. White, J. Liq. Chromatogr. 7(1984) 2021-2030.

Conditions
Detector: BAS LC-4B/17
Electrode: Ag, (BAS P/N, MF-1008)
Potential: +0.01 V vs Ag/AgCl
Column: 10 µm Spherisorb ODS (HPLC Technology)
Mobile Phase: 12.78 g of Na_2HPO_4, 3.2 g of hexadecyltrimethyl ammonium chloride, 1.4 g of Na_2EDTA. Make to 2.8 L with water and add 1 L acetonitrile (mixture adjusted to pH 6.8).

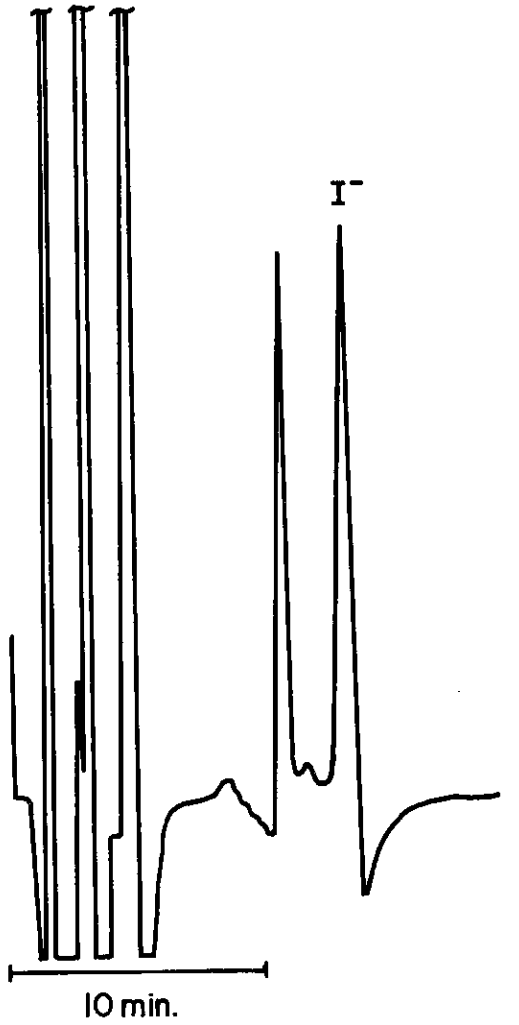

Figure 1. Chromatogram of a serum extract (see Sample Preparation). Redrawn from the above cited reference.

Detection Limit: 4 ng/mL. Injection volume was 50 µL which corresponds to 200 pg/injection.
Linear Range: 500 pg to 100 ng injected

2701 Kent Ave • W. Lafayette, IN 47906 • (317) 463-4527 • TEL: 276141 • FAX (317) 497-1102

Sample Preparation

Serum samples were deproteinated with acetonitrile and applied to a miniature anion exchange isolation column (containing an amino-bonded phase). Iodide was eluted in 0.2 M KH_2PO_4.

Comments

This report demonstrates that LCEC (using a silver working electrode) is a selective and sensitive method for the detection of iodide in serum. LCEC would allow serum iodide determinations to become routine in most laboratories.

Related References

1. Determination of Iodide in Baby Formula, LCEC Capsule 135. This report used a BAS 400 with a 3 µm, C_{18} (100 x 3.2 mm) column and obtained a separation similar to that presented in this report.