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NAMFON TONGTAVEE : INVESTIGATION OF CATALYTIC DETERMINATION OF IODIDE IN FLOW INJECTION TECHNIQUE. THESIS ADVISORS: DUANGJAI NACAPRICHA Ph. D., PRAPIN WILAIRAT Ph. D., 121 p., ISBN 974-664-317-7.

A flow injection (FI) system employing the catalytic behavior of iodide on the decomposition of $FeSCN^{2+}$ in the presence of nitrite was used to determine trace iodide at the parts per billion level. The system was operated using two modes, the normal continuous mode and the stopped-flow mode.

In the continuous mode, the absorbance of the flowing sample plug was recorded on a x/t recorder. In the stopped-flow mode, the flow was stopped after a certain time interval when the reaction zone had reached the observation cell. The stopped-flow mode was developed to increase the sensitivity of the analysis. Quantitation of iodide using the stopped-flow mode was carried out by two methods. One was based on the calibration of the absorbance signal at a fixed time and the concentration of iodide. The second method employed calibration between the rate of reaction and the analyte concentration.

Detection limits were found to be 4.2 ngI/mL (3S/N, n=10) for the continuous mode and 1.2 ngI/mL (3σ, n=10) for the stopped-flow mode. The two modes gave satisfactory precision although the flow was stopped by manually switching off the pump. For iodide at a low concentration (20 ngI/mL) the relative standard deviation (RSD) were found to be 4.9% (n=10) for continuous mode and 3.1% for stopped-flow mode. For a solution of 180 ngI/mL, which was the upper concentration limit, RSD for the continuous mode was 0.9%. RSD of 2.0% was found for the stopped-flow mode for the upper limit of 80 ngI/mL.

Comparison of the FI system, performed on 11 samples, showed some differences between the four methods, namely the present FI method, FI with the Sandell-Kolthoff method (both in continuous mode), the potentiometric method using iodide selective electrode (ISE) and inductively coupled plasma mass spectrometry (ICP-MS). However the present FI method can be further developed as an alternative method for determination of iodide.