

# Turkish Journal of Chemistry

Turkish Journal

of

Chemistry

## A Novel Method for the Spectrophotometric Determination of Thallium Using Methiomeprazine Hydrochloride

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**Abstract:** A new, simple, sensitive, and rapid spectrophotometric method is proposed for the determination of trace amounts of thallium(III). The method is based on the oxidation of methiomeprazine hydrochloride by thallium(III) in phosphoric acid medium to give a blue radical cation, having a maximum absorption at 645 nm. Beer's law is valid over the concentration range 0.5--4.0  $\mu\text{g mL}^{-1}$ , with molar absorptivity and Sandell's sensitivity of  $3.2 \times 10^4 \text{ L mol}^{-1} \text{ cm}^{-1}$  and  $0.0064 \mu\text{g cm}^{-2}$ , respectively. The detection limit of thallium determination is  $0.01 \mu\text{g mL}^{-1}$ . The tolerance limits for interfering ions are discussed. All variables were studied in order to optimize the reaction conditions. The efficacy of the proposed method is shown by the successful determination of traces of thallium in alloys, minerals, standard reference materials, water, and urine samples.

**Key Words:** Methiomeprazine hydrochloride (MMH), thallium(III) determination, spectrophotometry.

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Turk. J. Chem., **29**, (2005), 265-272.

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