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## Catalytic Spectrophotometric Determination of Manganese in Some Medicinal Plants and Their Infusions

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**Abstract:** The catalytic effect of manganese (II) on the oxidation of the dye 1,3-Dimethyl- 2 [4-N (N,N-dimethylamino) phenylazo] imidazolium perchlorate (BR) with potassium periodate in the presence of 1,10-phenanthroline was investigated. The reaction was followed spectrophotometrically by measuring the decrease in the absorbance of the dye at 540 nm. Under optimum conditions ( $5 \times 10^{-5}$  mol dm<sup>-3</sup> BR,  $2 \times 10^{-4}$  mol dm<sup>-3</sup> potassium periodate,  $1 \times 10^{-4}$  mol dm<sup>-3</sup> 1,10-phenanthroline, 0.1 mol dm<sup>-3</sup> buffer -- pH 3.0, 70 °C, 5 min) manganese (II) in the range 0.1--4.5 ng cm<sup>-3</sup> can be determined by the fixed-time method with a detection limit of 0.03 ng cm<sup>-3</sup>. The developed method is highly sensitive, selective, and simple. The method was applied successfully to analyse infusions of some medicinal plants (common balm, creeping thyme, common lungwort, and colt's-foot) for trace amounts of total manganese and free manganese (II) ions without separation. The results showed good agreement with those obtained by atomic absorption spectrophotometry.

**Key Words:** manganese determination, catalytic spectrophotometric method, medicinal plants, infusions

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