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Determination of Trace Amount of Fe (III) Using 3', 5'-Dinitro Salicylaldehyde Semicarbazone as an Analytical Reagent by Solvent Extraction and Spectrophotometric Method

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ABSTRACT

The trace amount of Fe (III) was detected by new sensitive, Analytical reagent viz.3',5'-Dinitro Salicylaldehyde Semicarbazone [3',5'DNSAS]. The reagent 3',5' DNSAS is synthesized in the laboratory and characterized by NMR, IR and elemental analysis. A selective spectrophotometric method is presented for the trace determination of Fe(III) using 3',5'DNSAS as spectrophotometric reagent (λ_{max} = 410 nm) in acidic aqueous solution (pH = 1.0). The Beer's law is obeyed in the concentration range from 1 to 10 ppm. The 3',5' DNSAS forms a 1:2 purple coloured complex. The Sandell's Sensitivity is 0.0375 µg cm^{-2} with molar absorptivity 2489.75 L mol^{-1} cm^{-1}. The proposed method has been successfully applied to the determination of Iron in various real and synthetic samples. The precision and the accuracy obtained were satisfactory.

Keywords: Iron, reagentconcentration, Spectrophotometric determination, n-Butanol, 3',5'-Dinitro Salicylaldehyde Semicarbazone derivative.