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Development of An Extractive Spectrophotometric Method for Determination of Cr (III) Using 2, 4-Dimethyl -3H- 1, 5 Benzodiazepine

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ABSTRACT

A new analytical reagent 2, 4-dimethyl -3H- 1, 5 benzodiazepine (DBA) is proposed for the extraction and spectrophotometric determination of Cr (III). The Reagent was synthesized and characterized by IR, NMR, elemental analysis as well as Mass spectrometry. DBA reacts with Chromium to give red colored complex which can be quantitatively extracted into n-butanol at pH 8.8. The organic extract shows maximum absorption at 500nm where absorption due to similarly prepared reagent blank is negligible. The beer's law is followed in the concentration range 1-10 µg L^{-1} of Cr (III). The molar absorptivity and Sandell's sensitivity of Cr (III) -DBA complex is 7460 Lit $mol^{-1}cm^{-2}$ and 0.02427 mg $cm^{2\,-1}$ respectively. The proposed method is rapid, sensitive, reproducible, and accurate and has been satisfactory applied for determination and separation of Chromium (III) in commercial mixtures, pharmaceutical samples and alloys.

Keywords: Chromium (III), Spectrophotometric determination, DBA reagent.