



Analytical Study of Al(III)-Tetracycline Complex for Drug Formulations

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ABSTRACT

An extensive analytical study of aluminum(III)-tetracycline complex formation in drug formulation was performed. The optimum experimental conditions for the analysis were established as follows: Concentration of Al (III) ion was: 0.0001 M; pH within the range 4.5-6.0; absorbance reach maximum stability within 2.0 minutes; and stoichiometric ratio of ligand to metal ratio is 2:1. This study revealed the possibility for using the complex formation for analytical purpose for tetracycline determination; hence it can be simple selective, very reliable, and time saving. The capabilities of the method for the analysis of real samples were evaluated by determination of tetracycline in some pharmaceutical formulations. The analytical data obtained from this procedure were as follow: Linear dynamic range was: (4×10^{-7} - 2×10^{-4} M) for tetracycline; RSD % 0.28; limit of detection: 3×10^{-7} mol L⁻¹, Sandell's sensitivity 0.625, and 0.797 gm.Cm⁻², E_{rel} . % 0.03 and Recovery % 100.03.

Keywords: Tetracycline, aluminum(III)-tetracycline complex, pharmaceutical formulations, linear dynamic range, limit of detection, Sandell's sensitivity.
