

A New Chemiluminescence Method for Determination of EDTA in Ophthalmic Drugs

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A new chemiluminescence (CL) method for determination of ethylenediaminetetraacetic acid (EDTA) at a micromolar level in a batch-type system has been proposed. The method is based on inhibition of CL emission accompanying oxidation of thiosemicarbazide (TSC) by H_2O_2 in alkaline medium in the presence of Cu(II) as a catalyst. Inhibition was caused by the formation of a robust complex between EDTA and the catalyst. Light emission was observed using a conventional fluorescence detector. Experimental variables affecting CL inhibition were optimized applying the Taguchi method. Under the optimum conditions, calibration plot was linear in the analyte concentration range 4×10^{-6} – 4×10^{-5} mol L⁻¹. Limit of detection was 1.6×10^{-6} mol L⁻¹ and relative standard deviation for five replicate determinations of 10^{-5} mol L⁻¹ EDTA was 2.58%. The method affords recoveries in the range 95–101%. It was successfully applied to the determination of EDTA in some pharmaceutical dosage forms.