

Abstract

The present work describes a selective, rapid and simple spectrophotometric method for the determination of cobalt (II) at trace levels using some selected hydroxytriazene. The method is based on the reaction of hydroxytriazene at pH 5.5 to 6.2, 6.0 to 6.8, 7.1 to 7.35, 7.3 to 7.9, 6.75 to 7.25 and 7.2 to 7.75 for hydroxytriazenes no (i), (ii), (iii), (iv), (v) and (vi) respectively and ethanol media with cobalt (II) to produce a highly absorbent yellow coloured chelate product with an absorption maximum at 393,397,417,406,410 and 412 nm for hydroxytriazenes no. (i), (ii), (iii), (iv), (v) and (vi), respectively. The reaction is instantaneous and the absorption remains stable for 24 Hrs. The average molar absorption coefficient were 1.1×10^4 , 1.2×10^4 , 1.8×10^4 , 2.5×10^4 , 2.1×10^4 , 1.9×10^4 mol⁻¹ dm³ cm⁻¹ for hydroxytriazene no (i), (ii), (iii), (iv), (v), (vi) respectively and Sandell's sensitivity in ng/cm² were 5.4, 4.9, 3.3, 2.4, 2.9 and 3.1 for hydroxytriazene no. (i), (ii), (iii), (iv), (v) and (vi), respectively. The stoichiometric composition of the chelate is 1:3 for hydroxytriazene no (i), (iv), (v), (vi), 1:2 for (ii) and 1:1 for (iii). A large excess of over 30 cations, anions and complexing agent do not interfere in the determination at equivalent amounts. The method was successfully used in Mussaenda arcu. The method has high precision and accuracy.