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Schwarzenbach has prepared and characterized a number of cobalt(III) – EDTA complexes, in which the ethylenediaminetetraacetate anion acts as a quinquadentate ligand. The sixth coordination position is occupied either by a neutral ligand or by an anion. Studies on these complexes such as resolution of diastereomers and acid and base hydrolysis reactions, on these complexes have been carried out by Busch and Bailar, Shimi and Higginson and Dyke and Higginson. But so far, no attempt has been made to prepare, characterize and to study the thermal and photochemical reactions of cobalt(III) – EDTA complexes, containing the azide ion as the ligand. The azido complexes are of considerable interest since certain thermal and photochemical properties characteristic to coordinated azido ligand have been reported in many cases. Attempts to prepare the complex earlier have not been successful and we have for the first time synthesized the complex ion and studied its behaviour in acid hydrolysis reactions. The behaviour of the complex is found to be different from those of the corresponding chloro and bromo complexes.
Experiments on the kinetic aspects of the acid hydrolysis of the nitro complex are of interest because these aspects have not been so far investigated and also because these experiments provide an opportunity to verify whether the nitro complex does show a similar or different behaviour as the azido complex. Further these experiments hold out prospects for examining how these two complexes behave, on irradiation, both in the regions of charge-transfer and ligand field bands, whether undergoing photoreduction process or photoaquation reaction.

Based on the studies on cobalt(III) - EDTA complexes of the type [Co(HEDTA)L]⁻ where L is the sixth ligand which is an anion, Schwarzenbach has reported that irrespective of the nature of L, the pKₐ value remains ca.3. In this context, it is felt that experiments could be continued to examine the effect of the strong nucleophilic ligands such as the nitro and azido ligands in the place of L. This study further lends itself to the analysis of the effect of ionic strength on the pKₐ values of these complexes.
The study of the change of the ionic strength and the pH of the medium may throw light on the mechanistic aspects of the acid-catalysed acid hydrolysis of these nitro and azido complexes.

It is also planned to determine the activation parameters of these hydrolysis reactions to gain more information about the mechanism.