(1) Potentiometric Determination of the Formation Constants of Ternary Complexes of Copper(II)

- Indian Journal of Chemistry, 23A, July 1984, pp. 596-598

The formation constants of the ternary complexes of the type [CuAL], where A is 5-nitro-1,10-phenanthroline and L = ethylenediamine (en), 1,2-propanediamine, 1,3-propanediamine, N-methylethylenediamine, glycine, β-alanine or malonate have been determined by potentiometric titration in dioxan-water (1 : 1, v/v) solution and I = 0.2 mol dm^{-3} $[NaClO_4]$ at 30°C. Due to the presence of electron withdrawing nitro group in 5-nitro-1,10-phenanthroline, the stabilization of the ternary complex [Cu-5-nitro-1,10-phenanthroline-L] is more than that of [Cu-1,10-phenanthroline-L].

(2) Inter Ligand Stacking Interaction in Ternary Complexes

- Indian Journal of Chemistry (In press)

The formation constants of the ternary complexes [MA(ATP)] where M = Cu or Ni and A = 5-nitro-1,10-phenanthroline or 2,2'-dipyridylamine (dpa) have been determined in dioxan-water (1 : 1, v/v) solutions and 0.2 mol dm^{-3} $[NaClO_4]$ at 30°C by potentiometric titrations. It is observed that there is an intramolecular stacking between the heteroaromatic N-bases and the base part of ATP resulting in greater stabilization of the mixed ligand complexes.

(3) Structural changes in ligands and consequent effect on ternary complexes in dioxan-medium

- Indian Journal of Chemistry (in press)

The formation constants of the ternary complexes of the type [CuAL], where A is 2,2'-dipyridylamine (dpa) or 2,2'-dipyridylketone (dpk) and L = ethylenediamine (en), 1,2-propylenediamine, 1,3-propylenediamine, N-methylethylenediamine, N-ethylethylenediamine, glycinate, β-alaninate or malonate were determined by potentiometric titration in aqueous and dioxan-water (1 : 9, 1 : 3, 1 : 1, v/v) solutions and 0.2 mol dm^{-3} $Na[ClO_4]$ at 30°C. The formation constant values of the mixed ligand complexes have been determined by using SCOGS computer program. The stability of the ternary complex is found to depend on the π acidities and ring size of ligands. The variation in the $\Delta \log K$ values have been explained in terms of M $\dashrightarrow$ L π interaction, size of the chelate ring and steric factors. The formation constant of the ternary complex [CuAL] where A = dpk is probably dependent on the equilibrium between its keto and gem-diol form in presence of water. The presence of such equilibrium has been indicated by determining the formation constants in aqueous-dioxan mixed solvents.