Mixed complexes of transition metals containing an imidazole group as ligand are commonly found in biological media and may have important roles in processes as catalysis of drugs interaction with biomolecules. It is also well known that the amino group acts as the primary anchor site for metal ions and, as such, is then able to promote the stepwise deprotonation and subsequent coordination of other successive binding sites, leading to the formation of the hydrolytically stable, fused, five-membered chelate rings with M(II)-N bonds [1-3].

In this study, the binary and mixed-ligand complexes formed between ligands (histidine (His), histamine (Him) and glycine (Gly)) and Cd(II) ion were studied potentiometrically in aqueous solution at (25.0±0.1)°C and I = 0.10M KCl in order to determine the protonation constants of the free ligands and stability constants of binary and ternary complexes. The complexation model for each system has been established by the software program BEST from the potentiometric data. The substituent effects were discussed based upon the protonation constant data [4]. Furthermore, possible structures for the complexes were purposed by comparing the protonation and stability constants (binary complexes) of histamine and glycine with the protonation and stability constants of L-histidine. The stability observed in mixed ligand systems was investigated by the use of logX (disproportionation constants) and ΔlogK values. The effects of electrostatic interaction, steric hindrance, π-bond influence, the size of the chelate ring upon logX and ΔlogK values were examine detail.

References