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Effect of Cu(II) Ions Inclusion Complex- Kinetic and Thermodynamic Studies

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Abstract : The kinetics study of histidine in the form of inclusion complex with Cu (II) was studied with help of β-cyclodextrin in acetic acid -sodium acetate buffer medium at 308 K. Thermodynamic parameters: free energy of activation (ΔG^0) enthalpy of activation (ΔH^0) and entropy of activation (ΔS^0) was calculated by studying the reactions at 303K, 308 K and 318K respectively. The positive enthalpy values and positive entropy values are obtained due to hydrophobic interaction of host (β-cyclodextrin)-guest (histidine) inclusion complexes. The formation of inclusion complex was confirmed by UV-Visible absorption studies. The stability constant values of histidine are 194.3 L/mol. The limit of detection (LOD) and limit of quantification (LOQ) were found to be 0.65 LM^{-1} and 1.96$LM^{-1.}$ ΔG° obtained are also negative. It indicated that the inclusion process proceeded spontaneously at experimental temperature.

Keywords : copper (II), histidine , peroxomonosulphate (PMS), β-cyclodextrin (β-CD) catalyst, inclusion complex, kinetics.

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