Preparation and Identification Complexes of Some Transition Metals with 4,4'-Bis(2-Hydroxy phenyl azo)- 3,3'-Dimethylbenzidine \([\text{BHADB}]\) and Study of Its Biological Activity

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Abstract:
This study included synthesis of ligand 4,4'-Bis(2-Hydroxy phenyl azo)- 3,3'-Dimethylbenzidine (BHADB), the ligand was prepared from reaction 3,3'-Dimethylbenzidine with 2-hydroxy phenol. Metal complexes of this ligand were prepared by reaction of transition metal chloride salt of Ni(II), Co(II) and Cu(II) with prepared ligand in ethanol. Characterization of the ligand and its complexes were investigated by FT-IR and UV-visible spectroscopy in addition to conductivity measurement. The molar ratio of ligand-metal were found to be (1:1) for Ni(II) complex and Co(II) complex, and (1:2) for Cu(II) complex. The spectral studies showed the geometry around the Ni(II) and Co(II) ions are distorted tetrahedral, the Cu(II) ion is octahedral. Also includes, the study of biological effect for these complexes on four different pathogenic species: \((\text{Streptococcus faecalis, Staphylococcus aureus})\), \((\text{Escherichia coli, Klebsiella pneumonia})\) the first and second species are Gram positive while the others are Gram negative (by using agar well diffusion method). Finally, it was found that these compounds show different activity of inhibition on the growth of the bacteria.