Synthesis, Spectral, Electrochemical and Biological Studies of Nitrogen Donor Macrocyclic Ligand and its Transition Metal Complexes

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Abstract

Novel complexes of Ni(II), Co(II), and Cu(II) were synthesized with the macrocyclic ligand, i.e., 5,8,13,16-tetraoxo-1,4,9,12-tetraazacyclohexa-decane. The ligand was prepared by the [2+2] condensation of succinic acid and ethylenediamine. Synthesized complexes have been characterized based on elemental analysis, FTIR, H-1 NMR, ESI MS, TG/DTA, UV-Vis spectroscopic techniques, conductivity and magnetic measurements. The molar conductance measurements of Cu(II), Co(II) and Ni(II) complexes in DMF correspond to non electrolyte nature. The redox properties of the complexes were extensively investigated by electrochemical method using cyclic voltammetry (CV). Based on these studies, a six coordinate octahedral geometry around the metal ions in the complexes has been proposed. These metal complexes were also tested for their in vitro antimicrobial activities against some bacterial and fungal strains to assess their inhibiting potential and the activities shown by these complexes were compared with standard drugs.

Keywords

Author Keywords: Macrocycle; Tetradentate; Metal complexes; Antimicrobial activities; Growth curve
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