



Electrochemical, Kinetic, Antimicrobial (MIC) Studies of Acyclic Mononuclear Schiff-base Copper(II) Complexes

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Abstract:A series of mononuclear copper(II) complexes have been prepared by Schiff base condensation derived from 5-Bromosalicylaldehyde, diethylenetriamine, tris(2-aminoethyl) amine, triethylenetetramine, N,N-bis(3-aminopropyl)ethylene diamine, N,N-bis(aminopropyl) piperazine and copper perchlorate. All the complexes were characterized by elemental and spectral analysis. Electronic spectra of the complexes show the d-d transition in the range of 575-620 nm, ESR spectra of the mononuclear copper(II) complexes show four lines, characteristic of square-planar geometry, with nuclear hyperfine spin 3/2. The copper(II) complexes show a normal room temperature magnetic moment value $\mu_{\text{eff}} = 1.71$ to 1.82 BM, which is close to the spin only value of 1.75 BM. Electrochemical studies of the complexes show irreversible one electron reduction process around -1.19 to -0.87 V. The reduction potential of the mononuclear copper(II) complexes shifts towards anodic direction upon increasing the chain length of the imine compartment. Electrochemical and catalytic studies of the complexes were compared on the basis of increasing the chain length of the imine compartment. All the complexes were screened for antifungal and antibacterial activity.

Keywords:Schiff-base ligands; copper(II) complexes; cyclic voltammetry; Catecholase activity.