



Spectroscopic Characterization and Biological Activity of Mixed Ligand Complexes of Cu(II) With 1,10-Phenanthroline / 2,2'-Bipyridyl and Heterocyclic Schiff Bases

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ABSTRACT

Novel ternary copper(II) complexes, viz, $[Cu(MIIMP)(bipy)(H_2O)_2]Cl(1)$, $[Cu(MIIMP)(phen)(H_2O)_2]Cl(2)$, $[Cu(CMIIMP)(bipy)(H_2O)_2]Cl(3)$, $[Cu(CMIIMP)(phen)(H_2O)_2]Cl(4)$, $[Cu(MMIIMP)(phen)(H_2O)_2]Cl(5)$, $[Cu(MMIIMP)(bipy)(H_2O)_2]Cl(6)$, where $MIIMP=2-[(5'-methyl-3'-isoxazolyl)imino]methyl$ phenol, $CMIIMP=4-chloro-2-[(5'-methyl-3'-isoxazolyl)imino]methyl$ phenol, $MMIIMP=3-methoxy-2-[(5'-methyl-3'-isoxazolyl)imino]methyl$ phenol, $phen=1,10$ -phenanthroline, $bipy=2,2'$ -bipyridyl have been synthesized. All the metal complexes have been characterized by physico-chemical techniques such as elemental analysis, IR, UV-VIS, TG-DTA, magnetic moments and ESR spectral studies. These compounds exhibit an octahedral geometry around copper, which is co-ordinated to two bidentate ligands such as 1,10-phenanthroline/ 2,2'-bipyridyl and heterocyclic Schiff bases (MIIMP/ CMIIMP/MMIIMP) and two water molecules bonded in the axial positions. In all the compounds Schiff base binds to copper through oxygen of the hydroxyl group and nitrogen of the azomethine group and 1,10-phenanthroline/ 2,2'-bipyridyl binds through its two heterocyclic nitrogens. These mixed ligand complexes have been screened for their antibacterial and antifungal activities in-vitro by paper disc method and it is observed that the mixed ligand complexes show better activity than corresponding Schiff bases.

Keywords: Schiff base, mixed ligand complex, spectral analysis, biological activity.
