
SYNTHESIS, CHARACTERIZATION AND ANTIMICROBIAL STUDIES OF Cu(II), Pd(II), Fe(III) AND Mn(II) COMPLEXES OF TETRADENTATE N₄ LIGAND

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ABSTRACT:

1,4-Bis(1-piperidineethyl)piperazine tetradentate N₄ type of ligand synthesized from piperazine and 1-(2-chloroethyl)piperidine HCl. The Cu(II), Pd(II), Fe(III) and Mn(II) complexes of ligand N₄ were synthesized by taking 1:1 ration of M:N₄. The ligand and complexes have been characterized by elemental analyses, ¹H-NMR, FT-IR, UV-Vis., spectroscopic techniques and mass spectrometric studies. The magnetic moment measurements and conductance measurements were carried out on all the complexes. The elemental analyses shows that the complexes obtained have the composition of [Cu(N₄)](PF₆)₂, [Pd(N₄)](PF₆)₂, [Fe(N₄)Cl₂]PF₆ and [Mn(N₄)Cl₂]. The spectroscopic data revealed, square planar geometries for Cu(II), Pd(II) and octahedral geometries for the Fe(III), Mn(II) complexes and the ligand acts as tetradentate N₄ donor. The ligand and all complexes were screened for their antibacterial activity against bacterial species *Enterococcus faecalis*, *Staphylococcus aureus*, *Escherichia coli* as well as fungi *Streptococcus mutans*, *Candida albicans*, *Aspergillus fumigatus*. The activity data revealed that the metal complexes are to be more potent antibacterials in comparison to parent ligand.

KEYWORDS:

1,4-Bis(piperidineethyl)piperazine, N₄ tetradentate ligand, Cu(), Pd(), Fe() and Mn(), antimicrobial activity.

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