International Journal of Advanced Technology in Engineering and Science
Vol. No.4, Issue No. 08, August 2016
www.ijates.com
ijates
ISSN 2348 - 7550

SPECTRAL, THERMAL, ANTIOXIDANT AND ANTIMICROBIAL STUDY OF NEW TETRADENTATE MACROCYCLIC LIGAND AND ITS CO (II), NI (II) AND CU (II) COMPLEXES

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ABSTRACT

A new series of macrocyclic metal complexes of type[$M(C_{22}H_{14}N_4O_2)X_2$], where M=Co(II), Ni(II), and Cu(II), X = Cl^-, NO_3^- and CH_3COO^- is synthesized by template condensation in methanolic medium in 1:1 molar ratio. All the synthesized complexes and ligand were characterized by various physicochemical techniques i.e. Elemental analysis, measurement of molar conductance, magnetic measurements, electronic IR EPR, mass spectral studies, thermal analysis. The structure of complexes has been determined with the help of spectroscopic as well as conductivity values and found to be six coordinated octahedral for Co(II) , Ni(II) and tetragonal for Cu(II) complexes. The ligand is coordinated to the metal ions in tetradentate manner. Molar conductance measurements showed that reported macrocyclic complexes are non-electrolytic in nature. All the complexes and synthesized ligand have been tested for their in vitro antibacterial activity against two gram +ve and two gram -ve pathogenic bacterial strains viz. staphylococcus aureus, bacillus cereus (gram +ve) and salmonella typhi, E.Coli(gram -ve) to access their inhibiting potential. The results obtained were compared with the standard antibacterial drug Ciprofloxacin.

The free radical scavenging activity of some newly synthesized complexes has been determined at different concentration range and compared with standard antioxidant Ascorbic acid.