

**STIMULATING THE DNA FRAGMENTS THROUGH HIGHLY EFFECTIVE CU(II),
CO(II), NI(II) AND MN(II) SCHIFF BASE METAL COMPLEXES – AN *IN VITRO*
APPROACH OF ANTIOXIDANT AND ANTIBIOGRAM ASSAY**

RAJU ASHOKAN & RANGAPPAN RAJAVEL

Department of Chemistry, Periyar University, Salem, Tamil Nadu, India

ABSTRACT

With the aim of exploring the biological properties of coordination compounds, we report for the first time the synthesis of precursors 4-[(2-Amino-phenylimino)-methyl]-benzene-1, 3-diol, *N*-(4-Methoxy-benzylidene)-benzene-1, 2-diamine and its Cu(II), Co(II), Ni(II), Mn(II) complexes derived from condensation route of 2,4-dihydroxybenzaldehyde, *o*-phenylenediamine and anisaldehyde were characterized by a set of chemical and spectroscopic measurements using elemental analysis, electrical conductance, magnetic susceptibility and spectral techniques (IR, UV–Vis, ¹H NMR and EPR). Elemental data are consistent with the proposed formula. IR spectra confirm the bidentate and tetradentate nature of the Schiff base ligands and coordination of metal complexes with the ligands. The distorted octahedral geometry around Cu(II), Co(II), Ni(II), and Mn(II) complexes were suggested by UV–Vis spectra and magnetic moment data. Absorption titration, electrochemical analyses and viscosity measurements have also been carried out to determine the mode of binding. Interaction of metal complexes with DNA revealed an intercalative mode of binding between them. The cleavage products of the complexes analyzed by neutral agarose gel electrophoresis indicated that the interaction of the metal complexes with supercoiled plasmid DNA yielded linear, nicked or degraded DNA. Antimicrobial studies showed an effective antimicrobial activity of the metal complexes after coordination with the ligands.

KEYWORDS: DNA Binding, Nucleolytic Cleavage, Antibioqram Assay, Scavenging Effect