



## Synthesis, Characterization and screening of antimicrobial activity of metal complexes derived from the Mannich base, N-[1-morpholino(4-diphenylaminobenzyl)]acetamide

S. Ravichandran\*<sup>1</sup> and C.Murugesan<sup>2</sup>

<sup>1</sup>Department of Chemistry, Veltech Dr.RR &Dr.SR Technical University, Avadi, Chennai-600 062, India

<sup>2</sup>Department of Chemistry, Jaya Engineering College,Thiruninravur, Chennai-602 024, India

**Abstract:** Neutral complexes of Cu(II), Co(II), Ni(II) and Zn(II) have been synthesized from a new Mannich base, N-[1-morpholino(4-diphenylaminobenzyl)]acetamide (**MDABA**) derived by the condensation of morpholine, 4-diphenylaminobenzaldehyde and acetamide. The ligand forms 1:1 (metal:ligand) type of complexes with Cu(II), Co(II), Ni(II) and Zn(II) metal salts. The structural features have been arrived from their microanalytical, IR, UV-Vis., <sup>1</sup>H-NMR, CV, EPR spectral data. The electrolytic behavior of the chelate was assessed from their molar conductance data. The magnetic susceptibility measurements suggested that all the complexes were paramagnetic except Ni and Zn, which were diamagnetic, and the magnitude of magnetic moment values were useful to find out the number of unpaired electrons which in turn were useful to further support the geometry suggested by electronic spectral data. The magnetic susceptibility and electronic absorption spectra of copper complex indicates an octahedral geometry around the central metal ion while cobalt, zinc complexes exhibit tetrahedral geometry and nickel complex shows square-planar structure. The electrochemical behaviour, the anodic and cathodic potential and the number of electron transfer were calculated using cyclic voltammogram. The cyclic voltammogram of copper complex in MeCN solution at 298 K was studied. The X-band EPR spectra of copper complex in DMSO at 300 K and 77 K were recorded and their salient features are discussed. The antimicrobial activity of the ligand and its complexes has been extensively studied on microorganisms such as *Staphylococcus aureus*, *Bacillus subtilis*, *Escherichia coli* and *Pseudomonas aeruginosa* by well-diffusion technique using DMSO as solvent. The values of zone of inhibition were found out at 37°C for a period of 24 h. It has been found that all the complexes have higher activity than the free ligand and the standard.

**Keywords:** metal complexes, Mannich base, N-[1-morpholino(4-diphenylaminobenzyl)]acetamide, antimicrobial activity, Synthesis, Characterization.