

## Abstract

The study involved the synthesis of transition metal complexes of iminodiacetate (IDA). Iminodiacetate is a versatile ligand with both amine and carboxyl donor groups which was reacted with Cu(II), Ni(II), Co(II), and Mn(II) under controlled conditions. The complexes were characterized by Fourier transform infrared spectroscopy (FT-IR), UV visible spectroscopy and photoluminescence (PL). Spectral evidence confirmed the coordination through the amino nitrogen and carboxylate oxygen atoms, which formed stable complexes with the metal center. Standard agar well diffusion method was used to evaluate the synthesized complexes for antibacterial screening against three bacterial strains i.e., *Escherichia coli*, *Staphylococcus aureus* and *Pseudomonas aeruginosa*. Results showed that the lipophilicity of metal complexes has been improved via ligand metal coordination that is due to easier contact with microbial membranes. Results were inspiring which showed enhanced antibacterial activity of the synthesized metal complexes as compared to the ligand. According to these results, IDA-based transition metal complexes could be useful as building blocks for the creation of novel antibacterial drugs.