Abstract

This study accentuates the synthesis of novel Schiff bases 2-(4-nitrophenyl)iminomethyl phenol as primary ligand L_1 and salicylaldehyde semicarbazone as secondary ligand L_2 along with their mixed ligand Co (II), Ni (II), Zn (II) and Cr (III) complex. Later on, these compounds were elucidated by the estimation of their melting points, FT-IT spectroscopy, UV-visible spectroscopy and photoluminescence methods. Additionally, synthesized complexes emerged to be an excellent target for biological studies because of aromatic ring in the arrangement of ligands along with their mixed ligand complexes as antimicrobial potential greatly depends on the molecular structure. Biological susceptibility of ligands along with mixed ligand complexes were evident against three gram positive *E. nangangensis*, *B. subtilis* and *S. aureus* and one gram negative *E. coli* strains by determining the zone of inhibition diameter along with the ciprofloxacin as a reference drug. Antifungal potential of synthesized ligands along with their mixed ligand complexes were displayed against *A. niger* by utilizing terbinafine as a standard drug. Furthermore, in order to investigate the biochemical properties of Schiff bases along with their mixed ligand complexes involve antioxidant activity by implementing DPPH method.