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Synthesis, Characterization, Crystallite size Determination and Evaluation of Biological Activity of Novel Co(II), Ni(II), Cu(II), Zn(II) Ternary Metal Complexes

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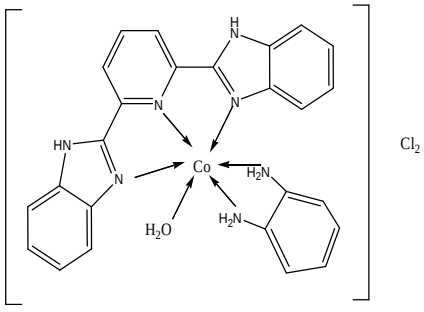
ABSTRACT

Four novel mixed ligand metal complexes namely $[Co(L_1)(L)_2H_2O]Cl_2$,(1) $[Zn(L_1)(L_2)OAc]OAc$ (2), $[Ni(L_1)(L_2)SO_4]$ (3) and $[Cu(L_1)(L_2)Cl]Cl$ (4) where L_1=2,6-bis (benzimidazole-2yl) pyridine (BBP), L_2=Ortho phenylene diamine (OPDA) have been synthesized and characterized by elemental analysis, molar conductance measurements, magnetic susceptibility measurements, TGA, DTA studies, mass, IR, ESR, electronic, SEM-EDX, powder XRD studies. Based on elemental analysis and spectral studies six coordinated geometries were assigned to the metal complexes. Powder XRD studies proved that the complexes were in nanocrystalline phase. Antibacterial activity of metal complexes was checked against gram positive and gram negative bacterial pathogens such as MRSA, B.cereus, B.subtilis, P.aeruginosa, E.coli, P.vulgaris. The ternary metal complexes inhibited the growth of bacterial strains and exhibited better anti bacterial activity.

Graphical Abstract



$[Co(BBP)(OPDA)H_2O]Cl_2$

Keywords: Antibacterial activity, Benzimidazole, Nanocrystalline phase, Ternary metal complex.