Role of Metal Complexes of 2-(benzothiazol-2-yl)-N\-(2,5-Dihydroxybenzylidene) Acetohydrazide as Antifungal

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The synthesis and characterization of Mn(II), Ni(II), Co(II), Cu(II) and Zn(II) of the 2-(benzothiazol-2-yl)-N\-(2,5-dihydroxybenzylidene)acetohydrazide are reported. Elemental analyses, IR spectroscopy, UV-Vis and magnetic susceptibility measurement, as well as, in the case of copper and manganese complexes, ESR spectroscopy have been used to characterize the complexes. Electronic and magnetic moments of the complexes indicate that, the geometries of the metal centers are either square planar or octahedral. The structures are consistent with the IR, UV-VIS, as well as conductivity and magnetic moments measurements. The fungicidal activities of the ligand and its complexes were investigated against Aspergillus nigar and Fusarium oxysporium. Complexes of cobalt (II) and copper (II) showed higher fungitoxic activity against Fusarium oxysporum than the ligand at all used concentrations. However, the manganese (II) complex shows a moderate toxic effect against Fusarium oxysporiurn in comparison to the ligand alone while the inhibitory effect of the complexes of nickel (II) and zinc (II) was not clearly manifested against this fungal strain. On the other hand, aqueous ions of the all tested metals showed a significant lower growth inhibition than that of the complexes being studied.