Synthesis, Spectroscopic Characterization and Biological Activity of 2-(p-toluidino)-N'- (2-hydroxybenzylidene) Acetohydrazide Complexes

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Ti (IV), VO (II), Ni (II), Co (II), Mn (II), Cu (II), Zn (II), Cd (II), Sn (II), ZrO (II), UO₂ (II), Fe (III), Ru (III), Ho (III), and Yb (III) complexes of 2-(p-toluidino)-N'- (2-hydroxybenzylidene) acetohydrazide have been prepared and characterized on the basis of various spectroscopic techniques like electronic, EPR, FT-IR and ¹H NMR studies, elemental analysis, magnetic properties and thermo-gravimetric analysis, and also by the aid of molar conductivity measurements. It is found that the Schiff base behaves as a monobasic tridentate monobasic bidentate or dibasic tridentate ligand bonding to the metal ions via the oxygen atom of carbonyl group in the enolic or ketonic form, azomethine nitrogen atom and/or oxygen atom of deprotonated phenolic hydroxyl group with 1:1 or 1:2 metal to ligand stoichiometry. Octahedral geometries have been assigned Ni (II), Co (II), Mn (II), Fe (III) and Ru (III) complexes, tetragonally octahedral geometry has been suggested for Cu (II) complexes, while square pyramidal geometry has been proposed for VO (II) complexes. The compounds were subjected to antimicrobial activity screening using Well diffusion method. Complexes exhibit inhibitory effect towards fungus (Aspergillus niger) more than the parent ligand. However complexes are noticeable for antibacterial activity at the same concentration.

Keywords: Acetohydrazide, syntheses, spectroscopic Studies, magnetism, biological activity