



Preparation and Biological Study of 1,2,4-Isopropylidene Malonate Bisriazoles and Bisisatin Transition Metal Complexes

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ABSTRACT

Three ligands were synthesized from the reactions of isopropylidene diethyl malonate or diethyl malonate hydrazides to form two heterocyclic rings of 1,2,4-triazoles [L_1 , 5,5'-(2-methylprop-1-ene-1,1-diyl)bis(4-phenyl-2,4-dihydro-3H-1,2,4-triazole-3-thione)], [L_2 , 5,5'-(2-methylprop-1-ene-1,1-diyl)bis(2,4-dihydro-3H-1,2,4-triazole-3-thione)], and isatine Schiff base [L_3 , N'1,N'3-bis[(3E)-2-oxo-1,2-dihydro-3H-indol-3-ylidene]propanedihydrazide]. These ligands were characterized and studied by the following techniques: UV-visible, FT-IR spectroscopy, ^1H and ^{13}C NMR spectroscopy, elemental analysis (C.H.N). These ligands coordinate to following metal ions; Cr^{+3} , Mn^{+2} , Co^{+2} , Ni^{+2} and Cu^{+2} , and their complexes were studied by magnetic susceptibility, molar conductivity, atomic absorption and molar ratio method. From these measurements may suggest the following configuration for these complexes: (a) octahedral geometry for the formula: $[\text{M}(\text{L}_1)(\text{H}_2\text{O})\text{Cl}]\text{Cl}$ ($\text{M} = \text{Cr}^{+3}$), and $[\text{M}(\text{L}_1)(\text{H}_2\text{O})]$ ($\text{M} = \text{Mn}^{+2}$, Ni^{+2}), (b) octahedral geometry with dimmer structure for the formula: $[\text{M}_2(\text{L}^*)_2(\text{H}_2\text{O})_4\text{Cl}_2] \text{Cl}_2$ (where $\text{L}^* = \text{L}_1$, L_2 . $\text{M} = \text{Co}^{+2}$, Cu^{+2}), and (c) octahedral geometry of the formula $[\text{M}(\text{L}_3)]\text{Cl}_2$ ($\text{M} = \text{Cr}^{+3}$, Mn^{+2} , Co^{+2} , Ni^{+2} and Cu^{+2}). The bactericidal activity of these complexes were determined for four local strains of pathogenic bacteria: *Escherichia Coli*, *Staphylococcus aureus*, *Proteus mirabilis*, and *Pseudomonas aeruginosa*, and some of these compounds exhibit the effectiveness of anti-Microbial activity.

Keywords: 1,2,4-Isopropylidene malonate bisriazoles, bisisatin, Schiff base, biological Study and transition metal complexes.