Available online at **www.joac.info**

ISSN: 2278-1862

Journal of Applicable Chemistry

2019, 8 (2): 555-564

(International Peer Reviewed Journal)

Synthesis, Characterization and Antimicrobial Activities of Mixed Ligand Complexes of Mn(II) and Mn(III) With 5-Chlorosalicylaldehyde and 2-Hydroxyaryl Carbonyl Compounds or β-Diketones

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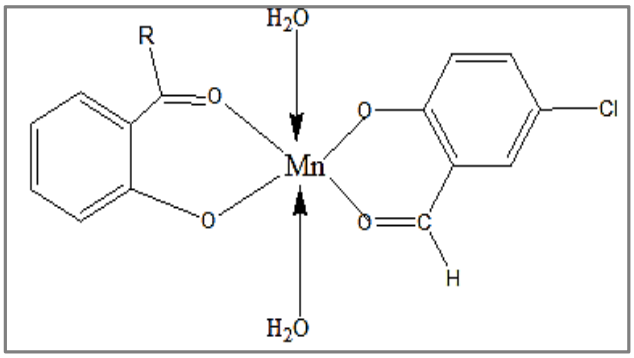
Accepted on 7th February, 2019

ABSTRACT

Mixed ligand complexes of Mn(II) of the type [Mn(L)(L')$(H_2O)_2$] and Mn(III) of the type [Mn(L')$(L)_2$], (HL=5-chlorosalicylaldehyde) and (HL=2-hydroxyacetophenone, 2-hydroxypropiophenone, 2-hydroxy- benzophenone, pentane-2,4-dione, 1-phenylbutane-1,3-dione or 1,3-diphenylpropane-1,3-dione) have been synthesized by the reaction of Manganese(II) acetate and Manganese(III) acetate with a mixture of two different ligands in 1:1:1 and 1:1:2 molar ratios. Physicochemical and spectroscopic methods were used to determine mode of bonding and coordination geometry of newly synthesized mixed ligands complexes of Mn(II) and Mn(III). The electrical conductance studies of the complexes in DMSO (dimethyl sulfoxide) in 10^{-3}M concentration indicate their non-electrolytic nature. Magnetic susceptibility measurements revealed paramagnetic nature of the complexes at room temperature. Biological activity of ligands and metal complexes was performed against gram positive bacterial strain Staphylococcus aureus and gram negative bacteria Escherichia coli.

Graphical Abstract



R= CH_3, C_2H_5, C_6H_5

Mixed lignd complexes of Mn(II) with5-chlorosalicylaldehyde and hap, hpp or hbp.

Keywords: Mixed ligand complexes, Manganese(II) and Manganese(III) complexes, FAB Mass, Antibacterial activities.