



Synthesis and Bio-Spectral Studies of The Mn(II) Complex of 2'-Hydroxy-4'-Methoxyacetophenoneoxime (HMAOX)

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ABSTRACT

*Mn(II) complex of 2'-hydroxy-4'-methoxyacetophenoneoxime (HMAOX) was synthesized from the paeonol oxime by using standard protocol and characterized. The stoichiometry of the complex was determined by spectrophotometric and potentiometric studies and mass spectral data which reveal a ML₂ type metal:ligand composition. The stability constant of the complex and the important thermodynamic parameters were computed from potentiometric and spectrophotometric studies, and thermal data respectively. Beer's law is obeyed in the concentration range 1-12 ppm of Mn. The value of molar extinction coefficient and sensitivity as per Sandell's scale are found to be $2.40 \times 10^2 \text{ L.mol}^{-1} \text{ cm}^{-1}$ and $0.228 \mu\text{g-Mn cm}^{-2}$ respectively. Limit of interference due to the presence of foreign ions in the spectrophotometric determination has also been determined. The IR studies reveal that the phenolic proton is lost on complexation and the oxygen of the phenolic (-OH) and nitrogen of the oximino (=NOH) groups coordinate with Mn(II) ion. The electronic spectra and magnetic susceptibility measurements indicate that the complex is para-magnetic and tetrahedral in nature. The antimicrobial activity of different concentrations of ligand and its Mn(II)-complex was measured by determining the growth of test fungi and bacteria by dry weight increase method and by agar diffusion method respectively against *Aspergillus niger*, *Aspergillus flavus*, *Aspergillus nidulans* and *Alternaria alternata* fungi and *Staphylococcus*, *Streptoproteus*, *Staph* and *Escherchia coli* bacteria. The results indicated that this complex have good anti-microbial properties as compared to the standard drugs (fluconazole and ciproflaxacin). The activity index (AI) for the, bioactivity was also derived.*

Keywords: Mn(II)-complex, Spectra, Thermodynamic parameters, Antimicrobial screening.