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Comparative DNA Binding of Iron and Manganese Complexes by Spectroscopic and ITC Techniques and Antibacterial Activity

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Abstract : Interaction of Schiff base complexes of iron and manganese (iron [N, N' Bis (5-(triphenyl phosphonium methyl) salicylidene) -1, 2 ethanediamine) chloride, [Fe Salen]Cl, manganese [N, N' Bis (5-(triphenyl phosphonium methyl) salicylidene) -1, 2 ethanediamine) acetate) with DNA were investigated by spectroscopic and isothermal titration calorimetry techniques (ITC). The absorbance spectra of complexes have shown hyper and hypochromism in the presence of DNA that is indication of interaction of complexes with DNA. The linear dichroism (LD) measurements confirmed the bending of DNA in the presence of complexes. Furthermore, isothermal titration calorimetry experiments approved that complexes bound to DNA on the base of both electrostatic and hydrophobic interactions. Furthermore, ITC profile exhibits the existence of two binding phases for the complex. Antibacterial activity of ligand and complexes were tested in vitro to evaluate their activity against the gram positive and negative bacteria.

Keywords : Schiff base complexes, ct-DNA, linear dichroism (LD), isothermal titration calorimetry (ITC), antibacterial activity
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