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Synthesis, spectral characterization and thermal study of some biological active Zinc(II) halide complexes

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Schiff base complexes are an important group of inorganic coordination compounds due to their ready availability, synthetic flexibility and facile structural modification. Coordination of of Schiff base ligands have attracted the attention of the researchers because of their diverse applications in molecular recognition, catalysis, and as components of luminescent and magnetic materials. In recent years, Schiff base coordination compounds have also been shown to display a variety of useful biological properties. Structural and spectral properties of these complexes are strongly dependent on the nature of the ligand structure . As a d^{10} metal ion, zinc is an essential trace element and plays a considerable role in maintaining human health. Zinc is a relatively abundant trace metal present in biological systems, second only to iron, and is present in more than 300 enzymes of living organisms [1-5].

In this research, a new bidentate ligand entitled as *N,N'*-Bis-(3-(2methoxyphenyl-2-allylidene)-hexane-1,6-diamine and its Zn(II) complexes were synthesized and identified by analytical and spectral data(FT-IR, UV-Visible and ^{1}H and ^{13}C-NMR). Moreover, thermal analysis of ligand and its complexes were studied in the range of room temperature to 1000 °C with a heating rate of 20 °C min^{-1} and then some thermokinetic data were estimated for all thermal decomposition steps. Moreover antibacterial and antifungal properties of the ligand and its mercury complexes were evaluated *in vitro* by well diffusion method.

Keywords: Zinc(II) complex, Schiff base, Thermal, Antibacterial, Antifungal.

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