

## **N<sub>2</sub>O<sub>2</sub> Salphen-Like Ligand and Its Pd(II), Ag(I) and Cu(II) Complexes as Potentially Anticancer Agents: Design, Synthesis, Antimicrobial, CT-DNA Binding and Molecular Docking**

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**Abstract :** In this investigation, Cu(II), Pd(II) and Ag(I) complexes with the tetra-dentate DSPH Schiff base ligand were synthesized. The DSPH Schiff base and its complexes were characterized by using different physicochemical and spectral analysis. The results revealed that the metal ions coordinated with DSPH ligand through azomethine nitrogen and phenolic oxygen. Cu(II), Pd(II) and Ag(I) complexes are present in a 1:1 molar ratio. Pd(II) and Ag(I) complexes have square planar geometries while, Cu(II) has a distorted octahedral (Oh) geometry. All investigated complexes are nonelectrolytes. The investigated compounds were tested against different strains of bacteria and fungi. Both prepared compounds showed good results of inhibition against the selected pathogenic microorganism. Moreover, the interaction of investigated complexes with CT-DNA was studied via various techniques and the binding modes are mainly intercalative and grooving modes. Operating Environment MOE package was used to do docking studies for the investigated complexes to explore the potential binding mode and energy. Furthermore, the growth inhibitory effect of the investigated compounds was examined on some cancer cells lines.

**Keywords :** tetradentate, antimicrobial, CT-DNA interaction, docking, anticancer

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