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Synthesis, characterization and biological study of cyclopalladated(II) complex bearing bioactive ligand

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Organometallic complexes have found numerous applications in targeted cancer treatment, due to the outstanding physicochemical properties including chemical stability and structural diversity. The coordination sphere aroun the metal center seems to have the most important factor in the successful design of potent anticancer agents. Small changes in the ligand architecture can induce particular function or significant capability in the metal complex. Cyclometallated complexes with a metal-to-carbon σ-bond stabilized by chelation, have attracted numerous attention in this field of research. [1-4] In the present study, mononuclear cyclometalated Pd (II) complex containing tyrosine amino acid, was synthesized and characterized via FT-IR and NMR spectroscopic methods. The interaction of the synthesized mononuclear complex with the deoxyribonucleic acid (DNA) and bovine serum albumin (BSA), was studied by UV-Vis absorption and fluorescence emission spectroscopies. Based on the experimental studies, an intercalating mode was proposed for the interaction between the complex and DNA. In addition, the interaction between the complex and the BSA seems to be static while the complex has bound to the hydrophobic binding site of the protein. Molecular docking theoretical calculation successfully confiremed the experimental results.

Keywords: Palladacycle, Cyclometallation, Anticancer, DNA, BSA

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