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Using HSA intraction to investigate the synthesis, characterization, and anti-cancer properties of a Co^{III} complex

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Abstract

Schiff bases are promising biologically intriguing substances that have a variety of medicinal applications, such as antibacterial, anti-inflammatory, and antipyretic effects[1,2]. FT-IR, UV-Vis, and elemental analysis are among the spectroscopic methods which are used in this study to synthesize and analyze the $[Co(III)(H_2L)\ (1\text{-}MeIm)_2]Clo_4$ Schiff base complex. One of our Schiff-bases molecules was found to attach to human serum albumin (HSA) via fluorescence quenching experiments. The binding affinity of the matching complex to HSA has been examined using fluorescence titration studies. It was determined that the computed Kq values were 8.2×10^{11}. Worth noting that these compounds' Kq values are higher than $2.0\times10^{10}\ M^{-1}s^{-1}$ [3].We can infer that static quenching is the main reason of the fluorescence quenching for these Schiff bases. Additionally, we may utilize Scatchard's equation to get the number of binding sites and the binding constant for static quenching. The in vitro cytotoxicity of the metal complex on the SW-480 cancer cell line was evaluated using the MTT test. The complex exhibited more activity against SW-480 than fluorouracil (FU), with an IC50 value of 0.006μM.

Key words: Schiff Base, HSA, Anticancer, Fluorescence

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