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Synthesis and Identification of Co^{III} Complex and Protein Binding by Fluorescence and CD Spectroscopy

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Abstract

Schiff bases are biologically significant compounds with various medicinal applications, including antibacterial, anti-inflammatory, and antipyretic properties [1,2]. In this study, FT-IR spectroscopy is utilized to synthesize and analyze the $[Co^{III}(H_2L)(morpholine)_2]ClO_4$ Schiff base complex. The binding affinity of this complex to human serum albumin (HSA) was assessed through fluorescence titration studies, revealing a calculated Kq value of 6.1×10^{11}. One of our Schiff base molecules was shown to bind to HSA, as demonstrated by fluorescence quenching and CD spectroscopy were employed to analyze this interaction and determine the binding mechanisms. Since the Kq values for these compounds exceed 2.0×10^{10} $M^{-1}s^{-1}$ [3], we can conclude that the observed fluorescence quenching in these Schiff bases is due to static quenching.

Keywords: Cobalt Complex, Schiff Base, HSA, anticancer, interaction, CD

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