Synthesis and structure elucidation of a cobalt(II) complex as topoisomerase I inhibitor:*In vitro* DNA binding, nuclease and RBC hemolysis.

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Streszczenie

Metal-based cancer chemotherapeutic agent of the type Co(II) complex $[Co(mpca)_2]\cdot H_2O$ (**1**), where, Hmpca = 9-methyl-[1,10]phenanthroline-2-carboxylic acid was synthesized and characterized by various spectroscopic and analytical techniques and further authenticated by single crystal X-ray diffraction methods. *In vitro* DNA binding studies of complex **1** with CT DNA was carried out by several biophysical techniques in accordance with molecular docking technique which revealed that **1** binds to DNA *via* intercalation mode having GC-rich sequences. Complex **1** cleaves pBR322 DNA *via* hydrolytic pathway (validated by T4 DNA ligase assay). Furthermore, complex **1** exhibits significant inhibitory effects on the catalytic activity of Topo-I at 25 μM concentration and further validated by molecular docking studies.

Słowa kluczowe

CT DNA binding, pBR322 DNA cleavage, T4 DNA ligase assay, Topo I inhibition activity, Molecular docking

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