

Title: DNA interaction and cytotoxicity studies of new ruthenium(II) cyclopentadienyl derivative complexes containing heteroaromatic ligands

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Abstract: Four ruthenium(II) complexes with the formula [Ru(eta(5)-C(5)H(5))(PP)L][CF(3)SO(3)], being (PP = two triphenylphosphine molecules), L = 1-benzylimidazole, 1; (PP = two triphenylphosphine molecules), L = 2,2'-bipyridine, 2; (PP = two triphenylphosphine molecules), L = 4-Methylpyridine, 3; (PP = 1,2-bis(diphenylphosphine) ethane), L = 4-Methylpyridine, 4, were prepared, in view to evaluate their potentialities as antitumor agents. The compounds were completely characterized by NMR spectroscopy and their crystal and molecular structures were determined by X-ray diffraction. Electrochemical studies were carried out giving for all the compounds quasi-reversible processes. The images obtained by atomic force microscopy (AFM) suggest interaction with pBR322 plasmid DNA. Measurements of the viscosity of solutions of free DNA and DNA incubated with different concentrations of the compounds confirmed this interaction. The cytotoxicity of compounds 1234 was much higher than that of cisplatin against human leukemia cancer cells (HL-60 cells). IC(50) values for all the compounds are in the range of submicromolar amounts. Apoptotic death percentage was also studied resulting similar than that of cisplatin. (C) 2010 Elsevier Inc. All rights reserved.

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