

New copper(I) complexes bearing lomefloxacin motif : spectroscopic properties, *in vitro* cytotoxicity and interactions with DNA and human serum albumin.

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Streszczenie

In this paper we present lomefloxacin's (HLm, 2nd generation fluoroquinolone antibiotic agent) organic and in-organic derivatives: aminomethyl(diphenyl)phosphine (PLm), its oxide as well as new copper(I) iodide or copper(I) thiocyanate complexes with PLm and 2,9-dimethyl-1,10-phenanthroline (dmp) or 2,2'-biquinoline (bq) as the auxiliary ligands. The synthesized compounds were fully characterised by NMR, UV-Vis and luminescence spectroscopies. Selected structures were analysed by theoretical DFT (density functional theory) methods. High stability of the complexes in aqueous solutions in the presence of atmospheric oxygen was proven. Cytotoxic activity of all compounds was tested towards three cancer cell lines (CT26 - mouse colon carcinoma, A549 - human lung adenocarcinoma, and MCF7 - human breast adenocarcinoma). All complexes are characterised by cytotoxic activity higher than the activity of the parent drug and its organic derivatives as well as cisplatin. Studied derivatives as well as parent drug do not intercalate to DNA, except Cu(I) complexes with bq ligand. All studied complexes caused single-stranded cleavage of the sugarphosphate backbone of plasmid DNA. The addition of H₂O₂ caused distinct changes in the plasmid structure and led to single-and/or double-strain plasmid cleavage. Studied compounds interact with human serum albumin without affecting its secondary structure.

Słowa kluczowe

Copper(I) complexes, cytotoxicity, Lomefloxacin, luminescence, Phosphines

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