NH P 2

Pikolinato-rutenijum(II) arenski i bipiridil kompleksi: sinteza i karakterizacija

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Poslednjih godina Ru(II) kompleksi se ispituju kao potencijalni prolekovi u fotodinamičkoj i fotoaktivacionoj terapiji. U cilju poboljšanja aktivnosti sintetisanih polusendvič kompleksa Ru(II) sa derivatima pikolinske kiseline, izmenili smo arenski deo kompleksa bipiridinom. Citotoksičnost ovih kompleksa nije poboljšana, ali sledeći korak u istraživanju je ispitivanje fotoaktivnosti ovih bipiridinskih kompleksa na šta upućuje prisustvo bipiridinskog liganda. Sintetisano je tri Ru(II)-toluen kompleksa i tri odgovarajuća Ru(II)-bipiridin kompleksa sa pikolinskom kiselinom i njenim 4-karboksilato i 5-karboksilato derivatima. Ovih šest kompleksa je sintetisano polazeći od etanolnih rastvora $[Ru(\eta^6\text{-toluene})Cl(\mu\text{-}Cl)]_2$ ili $[RuCl_2(bpy)_2]$ uz dodatak odgovarajućeg pikolinskog liganda (1:1 mol), u toku par sati mešanja na sobnoj temperaturi, odnosno uz refluks, redom. Svi dobijeni kompleksi okarakterisani su NMR i IC spektroskopijom, kao i rendgensko strukturnom analizom. Svi bipiridin Ru(II) kompleksi kao i aren-pikolinski kompleksi kristalisali su u $P2_1/n$ prostornoj grupi, dok je Ru(II)-toluen kompleks sa 5-karboksilatnim derivatom pikolinske kiseline, kristalisao u P-1 prostornoj grupi simetrije. Najbolju aktivnost prema MDR Colo 320 ćelijskim linijama, pokazao je kompleks $[Ru(\eta^6\text{-toluene})(pic)Cl]$ sa IC_{50}=84.84 ± 4.79 μM.

Picolinate-ruthenium(II) arene and bipyridil complexes: synthesis and characterization

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In recent years Ru(II) complexes have been investigated as potentially good prodrugs that can undergo photodynamic therapy (PDT) or photoactivated chemotherapy (PACT). In order to improve the activity of the synthesized half-sandwich Ru(II) complexes with the derivatives of picolinic acid, we changed the arene part of these complexes with bipyridine. Activity against cancer cell line was not better, but the next step in the study would be the examination of the photoactivity of these bipyridine complexes, as that is indicated by the presence of bipyridine ligand. We have synthesized three Ru(II)-toluene complexes and three coresponding bipyridine Ru(II) complexes with picolinic acid, and its 4-carboxylic and 5-carboxylic derivatives. These six complexes were synthesized using ethanol solution of starting $[Ru(\eta^6\text{-toluene})Cl(\mu\text{-}Cl)]_2$ or $[RuCl_2(bpy)_2]$ and corresponding picolinate ligand (1:1 mol) and stirring at r.t. or refluxing, respectively. All complexes were characterized by NMR and IR spectroscopy, as well as X-ray crystalography. All bipyridine ruthenium complexes and arene/picolinic complex crystallized in the centro-symmetric space group $P2_1/n$, while Ru(II)-toluene with 5-carboxylic derivate of picolinic acid crystallized in triclinic crystal systems in space group P-1. The best activity against MDR-Colo 320 cell lines, had simple $[Ru(\eta^6\text{-toluene})(pic)Cl]$ with IC_{50}=84.84 ± 4.79 μM.