NH P 3

Organorutenijumski(II)-halido kompleksi sa derivatima benzimidazola: sinteza i uporedna citotoksična studija

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Kompleksi rutenijuma predstavljaju najperspektivniju alternativu kompleksima platine koji se decenijama unazad koriste kao antikancerogeni lekovi. Stoga opisujemo sintezu i kompletnu karakterizaciju šest novih kompleksa [(η^6-*p*-cymene)RuX($L_{1,2}$)] gde je HL_1= 1*H*-benzimidazol-2-karboksilna kiselina, HL_2= 5-hloro-1*H*-benzimidazol-2-karboksilna kiselina, a X= Cl^-, Br^-, I^-. Citotoksičnost kompleksa je ispitana na ćelijskim linijama K562 i MRC-5.
Ru(II) kompleksi su dobijeni u reakciji dva ekvivalenta HL_1, odnosno HL_2 sa ekvimolarnom količinom [(η^6-*p*-cymene)RuX_2]$_2$ u etanolu na sobnoj temperaturi. Nakon četvoročasovnog mešanja, izolovan je finalni proizvod u vidu žuto-narandžastog taloga. Kompleksi su okarakterisani pomoću IC, NMR i MS spektrometrije, elementalne analize i rendgenske strukturne analize za [(η^6-*p*-cymene)RuI(L_1)] koji kristališe u *P*2$_1$/*n* prostornoj grupi. Ru(II) jon je oktaedarski koordinovan za imidazolski atom azota i karboksilatni kiseonik potvrđujući konformaciju stolice tipičnu za ovaj tip kompleksa. Kompleksi sa I^- ligandom pokazuju umerenu, ali selektivnu citotoksičnost prema K562 (IC_{50} ([(η^6-*p*-cimen)RuI(L_1)]) =53.9±2.2 μM i IC_{50} ([(η^6-*p*-cimen)RuI(L_2)]) =83.97±3.85 μM).

Organoruthenium(II)-halido complexes with benzimidazole derivatives: synthesis and comparative cytotoxic study

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Ruthenim complexes are the most promising alternative to platinum complexes which have been utilized as anticancer drugs decades ago. Thus we describe synthesis and full characterization of six new complexes [(η^6-*p*-cymene)RuX($L_{1,2}$)], where HL_1= 1*H*-benzimidazole-2-carboxylic acid, HL_2= 5-chloro-1*H*-benzimidazole-2-carboxylic acid, and X= Cl^-, Br^-, I^-. Cytotoxicity of the complexes was studied on K562 i MRC-5 cell lines.
Ru(II) complexes were obtained in a reaction of two equivalents of HL_1 or HL_2 with equimolar amount of [(η^6-*p*-cymene)RuX_2]$_2$ in ethanol at r.t. After four-hour long stirring, the final product was isolated in a form of a yellow-orange precipitate. The complexes were characterized by IR, NMR and MS spectrometry, elemental analysis and X-ray diffraction analysis for [(η^6-*p*-cymene)RuI(L_1)], crystallizing in the *P*2$_1$/n space group. The Ru(II) ion is octahedrally coordinated for imidazole nitrogen atom and carboxylate oxygen confirming ''piano stool'' conformation typical for this type of complexes. Complexes with I^- ligand show moderate but selective cytotoxicity towards K562 (IC_{50} ([(η^6-*p*-cimen)RuI(L_1)])= =53.9±2.2 μM and IC_{50} ([(η^6-*p*-cimen)RuI(L_2)]) =83.97±3.85 μM).