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Klub mladih hemičara Srbije
Serbian Young Chemists' Club

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i

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PROGRAM

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OH P 02

Sinteza Pt(II) kompleksa sa 2-(fenilselanilmetil)oksolanom kao ligandom

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Kompleksi prelaznih metala sa organo-selenovim jedinjenjima kao ligandima su privukli posebnu pažnju zahvaljujući svojim biološkim i biomedicinskim primenama. Oni mogu ispoljavati citotoksična, antimalarijska, antileukemijska i antitumorska svojsta.[1] U prethodnom radu ispitivali smo antioksidativnu i antiproliferativnu aktivnost 2-(fenilselanilmetil)oksolana (L) na ćelijama raka debelog creva (HCT-116) i raka dojke (MDA-MB-231).[2] Koordinovanjem za Pd(II) dobijen je kompleks sa citotoksičnim i citostatičkim dejstvom. U cilju daljih istraživanja sintetisali smo njegov Pt(II) analog ne bi li uporedili biološku aktivnost sa odgovarajućim Pd(II) kompleksom. U ovom radu predstavljamo sintezu novog Pt(II) kompleksa sa organo-selenovom grupom. Ligand L je dobijen po već opisanoj proceduri.[3] Jedinjenje L je potom tretirano sa K_2PtCl_4 u višku, na 40 °C, i EtOH/MeOH sistemu rastvarača, pri čemu je dobijen kompleks C (Shema 1).

Synthesis of a Pt(II) complex with 2-(phenylselanylmethyl)oxolane as a ligand

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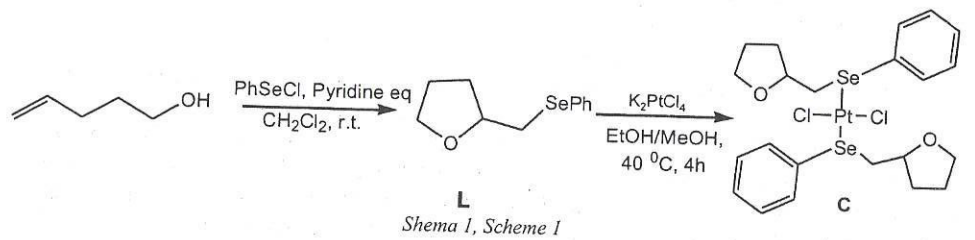
Transition metal complexes with organo-selenium compounds as ligands have attracted considerable interest due to their biological and biomedical applications. They can display cytotoxic, antimalarian, antileucemic and antitumor properties.[1] In our previous work we have screened 2-(phenylselanylmethyl)oxolane (L) for its antioxidant and antiproliferative efect on colon cancer cell line HCT-116 and breast cancer cell line MDA-MB-231.[2] Coordinating L to Pd(II) gave complex which exhibits cytostatic and cytotoxic abilities. To continue this line of work, we have synthetisized its Pt(II) analog, in order to compare its biological activities with those of Pd(II) complex.
Herein we report the synthesis of a new Pt(II) complex bearing organo-selenium moiety. Ligand L was created using a described method.[3] Compound L was then treated with an excess of K_2PtCl_4 at 40 °C, in EtOH/MeOH mixture as a solvent system, and afforded complex C (Scheme 1).



Shema 1, Scheme 1

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2. J.V. Kosaric at all, *JBUON*, **19** (2014)283-290
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OH P 03

Sinteza i spektralna karakterizacija biblioteke 1-fenilpirazola koji sadrže ferocen i njihovih fenil analoga

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Rastuća pojava otpornosti mikroorganizama na postojeće antibiotike učinila je pronalaženje novih antimikrobnih agenasa jednim od osnovnih ciljeva medicinskih hemičara. Jedna od strategija koja omogućava dobijanje jedinjenja sa pojačanom ili novom biološkom aktivnošću je uvođenje ferocenil grupe u jedinjenja sa već dokazanom biološkom aktivnošću. U ovom radu, u cilju budućeg ispitivanja potencijalne biološke aktivnosti, izvršena je sinteza 1*H*-1-fenil-3-ferocenil-pirazol-4-karboksaldehida (jedinjenja za koje je poznato da poseduje antibiotske osobine), a zatim i biblioteke alkohola adicijom Grignard-ovih reagenasa na ovaj aldehid. Sintetisani su i njihovi fenil analozi radi uporednog ispitivanja njihove aktivnosti, tj. utvrđivanja doprinosa ferocenskog jezgra utvrđenoj aktivnosti. Prinosi reakcija sinteze alkohola su bili u opsegu od 74 do 96%. Sva jedinjenja iz biblioteke (ukupno 24 sintetisanih jedinjenja) predstavljaju potpuno nova jedinjenja koja su potpuno spektralno okarakterisana (MS, IR, UV-Vis, 1D- i 2D-NMR).

Synthesis and spectral characterization of a library of 1-phenylpyrazoles containing a ferrocene unit and their phenyl analogues

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Due to an increasing emergence of microbial resistance to existing antimicrobial drugs, the design and discovery of new antimicrobial agents has become one of the main investigational goals of many medicinal chemists. A synthetic strategy that frequently leads to the discovery of new biologically active compounds or those with potentiated biological properties is the introduction of a ferrocenyl group into a compound with an already established biological effect. In this work, with an aim of finding new antimicrobial agents, a library of alcohols was synthesized by the addition of different Grignard reagents to the aldehyde group of 1*H*-3-ferrocenyl-1-phenyl-pyrazole-4-carbaldehyde (a compound with already demonstrated antimicrobial activity), itself obtain in a Vilsmeier-Haack reaction starting from the phenylhydrazone of acetophenone. The library included phenyl analogues of the prepared ferrocene-containing alcohols (formed by a formal exchange of the ferrocenyl group with a phenyl one). The phenyl analogues allowed determining the extent the ferrocene core contributes to the overall activity. All prepared alcohols (24 in total) were new compounds obtained in 74-96% yield. All of the synthesized compounds were fully spectrally characterized (MS, IR, UV-Vis, 1D- and 2D-NMR).

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