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Ruthenium and Gold Anticancer Complexes Based on Glucose Phosphites

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Ruthenium complexes and organometallic compounds are amongst the most promising non-platinum metal-based anticancer agents. Different approaches have been explored in the design of new ruthenium anticancer complexes, including synthesis of mono- bi- or multi-functional compounds, specific targeting kinase and proteins, attachment of biologically active moiety [1,2]. Attaching of a carbohydrate moiety to a metal center provides new complexes that exploit the biochemical and metabolic functions of diverse sugars in living organisms for transport and accumulation.

In this report, the synthesis of new sugar-phosphite ruthenium and gold complexes and the characterization in terms of cytotoxicity and stability will be presented. Triruthenium-carbonyl clusters with glucose-modified bicyclophosphite showed excellent anticancer and anti-angiogenic activity. Biological activity was found strongly depend on the number of bicyclophosphite ligands. Attachment of the bexarotene moiety (anticancer drug and agonist of RXR receptor) significantly increase anticancer activity of ruthenium complex. Coordination of sugar-phosphites to the Au(I) center leads to the new class of antiproliferative metal complexes.

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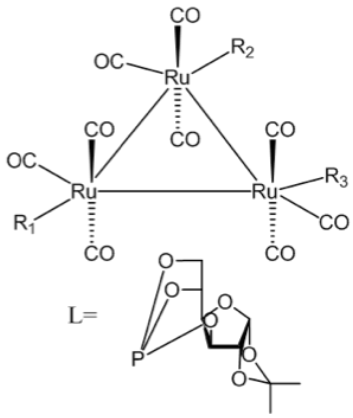
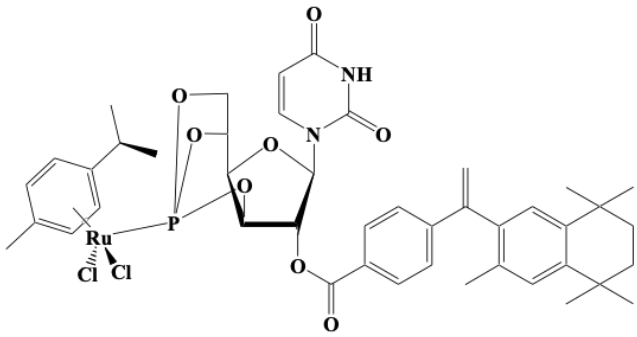


1 R_1=**L**, R_2= R_3=CO
2 R_1=R_2=**L**, R_3=CO
3 R_1=R_2=R_3=**L**



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