

COMPARATIVE SOLUTION SPECIATION STUDY ON ANTITUMOR Rh(III)(η^5 -C₅Me₅) COMPLEXES

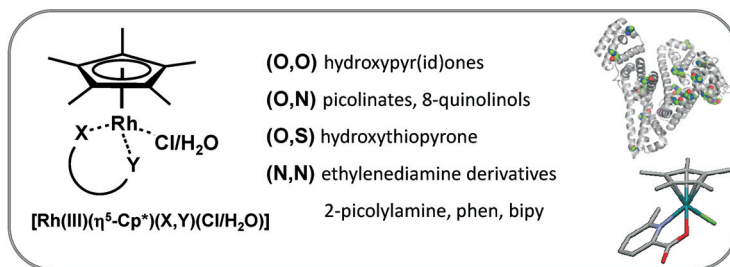
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Organoruthenium complexes are attractive alternatives to anticancer Pt(II) compounds and the Ru(III) complexes NKP-1339 and NAMI-A, and the Ru(II)-arene complex RAPTA-C have gained significant prominence due to their clinical and/or preclinical success. Half-sandwich Rh(III)-arenyl complexes are isoelectric with Ru(II)-arene complexes and have tunable reactivity and numerous of them show remarkable antiproliferative activity [1]. Despite the large number of Rh(III)(η^5 -C₅Me₅) based compounds quite few information is available about their solution speciation, although the knowledge on the solution stability and interactions with serum proteins strongly contributes to the understanding and controlling of the pharmacokinetic properties and mechanism of action.



In our work a series of Rh(III)(η^5 -C₅Me₅) complexes formed with various (O,O), (O,N), (O,S) and (N,N) donor set containing ligands was investigated in aqueous solution by the combined use of pH-potentiometry, UV-Vis spectrophotometry and 1H-NMR spectroscopy regarding their solution stability, lipophilicity and H₂O/Cl⁻ co-ligand exchange processes. Additionally these organorhodium complexes were studied by single-crystal X-ray diffraction and their antiproliferative effect was monitored in human cancer cell lines. The bioactivity unquestionably depends on numerous factors; our aim is to reveal differences in the solution behavior of these organorhodium compounds which may contribute to their diverse antiproliferative effect. Speciation results [2] are compared to analogous Ru(II)(η^6 -*p*-cymene) complexes as well. Interaction of some selected Rh(III)(η^5 -C₅Me₅) compounds towards human serum albumin was also studied to investigate differences or similarities in the strength and nature of binding in the case of biologically active and non-active complexes.

Acknowledgement: OTKA PD103905, János Bolyai Research Scholarship.

References:

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