NEW COMPLEX COMPOUNDS OF SELECTED PLATINUM GROUP METAL IONS IN CORRELATION WITH THEIR CYTOTOXIC ACTIVITY

Joanna Masternak[a], Agnieszka Gilewska[a], Barbara Barszcz[a], Katarzyna Kazimierczuk[b], Jerzy Sitkowski[c,d] and Joanna Wietrzyk[e]

[a]Institute of Chemistry, Jan Kochanowski University, Kielce, Poland
[b]Faculty of Chemistry, Gdańsk University of Technology, Gdańsk, Poland
[c]Institute of Organic Chemistry, Polish Academy of Sciences, Warszawa, Poland
[d]National Medicines Institute, Warszawa, Poland
[e]Hirszfeld Institute of Immunology and Experimental Therapy,
Polish Academy of Sciences, Wrocław, Poland

Much attention is now being paid in laboratories around the world to the preparation, physicochemical analysis and study of the potential biological activity of new complex compounds, particularly platinum group metal ions. This is mainly due to the use of Pt(II) complexes in anticancer therapy, but also to the search for a new generation of transition metal complexes that will be more effective yet safer. Despite the many known and active $Ru^{n+,}$ Ir^{n+}, Rh^{n+}, Os^{n+} complexes, their mechanism of action (MoA) is still unclear and their biological targets have not been fully identified [1-3]. Therefore, in in vitro studies, it is important to understand the thermodynamics of the redox equilibrium and the kinetics of the analyzed compounds by studying potential interactions with biomolecules such as DNA, HSA, GSH or NADH. In this context, I would like to summarize our recent in vitro research on new ruthenium, rhodium and iridium complexes with potential anticancer activity. The main objectives of our research were: i) to evaluate the influence of central ions on the cytotoxic activity of the complexes, ii) to search for the relationship between the type of ligands with different donor atoms (N,N; N,O and C,N) and the cytotoxic properties of complexes with the same central ion, and iii) to compare the structures of binuclear complexes and their biological properties.

[1] M. Zaki, S. Hairatb, E. S. Aazam, RSC Adv., 2019, 9, 3239–3278

[2] Ch. C. Konkankit, S. C. Marker, K. M. Knopfa, J. J. Wilson, Dalton Trans., 2018, 47, 9934-9974

[3] T. Gianferrara, I. Bratsos, E. Alessio, Dalton Trans., 2009, 7588-7598.