Synthesis and comparative evaluation of cytotoxicity *in vitro* of new platinum complexes with 3-amino-α-tetralonespiro-5'-hydantoin

A. Bakalova[1*], B. Nikolova-Mladenova[1], G. Momekov[2], D. Ivanov[1]

[1]Department of Chemistry, Faculty of Pharmacy, Medical University-Sofia, 2 Dunav Str., 1000 Sofia, Bulgaria,
[2]Department of Pharmacology, Pharmacotherapy and Toxicology, Faculty of Pharmacy, Medical University-Sofia, 2 Dunav Str., 1000 Sofia, Bulgaria

Cisplatin is one of the most successful compounds in the fight against cancer. Recently, interest was directed towards the development of cisplatin analogues which possess N-heterocyclic carrier ligands, coordinated to the cytotoxic platinum(II) moiety, instead of one or both of the am(m)ines. Hydantoins form a large group of derivatives widely applied in medicine and pharmacy, especially as anticonvulsants, antiarrhythmics, antibacterial drugs, cytotoxic agents etc.

A new *cis*-[$Pt(NH_3)LCl_2$], where L is 3-amino-α-tetralonespiro-5'-hydantoin was synthesized and studied. The molecular formula of the complex was confirmed by the elemental analysis, melting point and IR spectra. The results show that the coordination of the ligand with metal ion was realized by nitrogen atom of the amine group. On the basis of the results from the physicochemical investigation, the most probable molecular structure of the platinum complex was proposed.

This compound as well as previously prepared and studied Pt(II) and Pt(IV) complexes with general formulae *cis*-[PtL_2Cl_2] and *cis*-[PtL_2Cl_4], where L is the same ligand 3-amino-α-tetralonespiro-5'-hydantoin were investigated for cytotoxicity *in vitro* on HL-60 and SKW-3 human tumour cell lines. The results showed that all complexes exerted concentration dependent antiproliferative activity.