Proceedings International
Platinum Open Access Journal (ISSN 2668-6384)

Proceedings, Abstract
Volume 5, Issue 1, 2023, 39
https://doi.org/10.33263/Proceedings51.039

Biological Activity of the Metal Complexes in Different Tumor Cell Lines †

Mirela Mihăilă [1,*], Marinela Bostan [1], Camelia Hotnog [1], Viviana Roman [1], Lorelei I. Brașoveanu [1], Alexandra-Cristina Munteanu [2], Valentina Uivaroși [2]

[1] Virology Institute „Stefan S. Nicolau", Center of Immunology, Romanian Academy, 285 Mihai Bravu Street, 030304, Bucharest, Romania
[2] Carol Davila University of Medicine and Pharmacy, Faculty of Pharmacy, Department of General and Inorganic Chemistry, 6 Traian Vuia Street, 020956, Bucharest, Romania
* Correspondence: mihmirela@yahoo.com (M.M.);
† Presented at 2nd Edition of the OncoHub Conference – Connecting Scientists and Physicians for Next Generation Cancer Management, Poiana Brașov, Brașov, 21-23 September 2022

Received: 10.12.2022; Accepted: 20.12.2022; Published: 5.01.2023

Abstract: Cancer is a rapidly growing disease of the current era, a disease of cells that is thought to evolve along a multi-step process: the transformation of normal cells, tumor progression, and advanced metastasis. Cancer chemotherapy is based on the principle of selective toxicity: an antitumor substance selectively kills tumor cells without killing normal cells. In many cases, patients develop mechanisms of resistance to one or more chemotherapeutic agents, such as cisplatin (CisPt). Continuous research is going on in the direction of developing effective molecules for cancer treatment. Cytotoxicity of the metal complexes, as compared to CisPt, was tested on LoVo (human colon adenocarcinoma), SK- OV-3 (human ovary adenocarcinoma), HeLa (human epitheloid cervix adenocarcinoma) standardized cell lines, by using the colorimetric assay with MTS. In addition, real-time cell analysis (RTCA) by the xCELLigence System was used to continuously monitor compound-mediated cytotoxicity vs. cell proliferation. Moreover, the modulation effects of cell treatments on cell cycle phases and apoptotic events were assessed by flow cytometry approaches. The assessment of cytotoxicity by the RTCA technique confirms the results of the effect of the tested compounds on cell viability by the colorimetric method with MTS, an effect dependent on the concentration and the treatment period. The analyzed substances do not significantly affect the apoptotic process of normal cells, but the effect induced by the studied substances on tumor cells is dependent on the concentration, the time of exposure to the treatment, and the type of tumor cells subjected to the treatment. The analyzed compounds influence the development of the cell cycle of the tumor cells, causing a decrease in the S phase, which is accompanied by the blocking of the cell cycle in the G1 phase for LoVo tumor cells or the blocking of the cell cycle in the G2 phase for SKOV3 tumor cells.

Keywords: cancer; metallodrugs; cytotoxicity; cytometry.

Funding

Projects 383PED/2020, PD 219/2020.

Acknowledgments

This research has no acknowledgment.

Conflicts of Interest

The authors declare no conflict of interest.