## E-BABE-Zn (II)/Au (I), Zn (II)/Ag (I), Cu (II) and Co (II) complexes with schiff bases as promising cytotoxic agents: Is there a room for optimism?



Radostina Ivaylova Alexandrova

Bulgarian Academy of Sciences, Bulgaria

Co-author's: Desislav Dinev¹, Tanya Zhivkova¹, Milena Georgieva¹, Georgi Miloshev¹, Rossen Spasov², Albena Alexandrova¹, Gabriela Marinescu³, Daniela-Cristina Culita³ and Luminita Patron³

The aim of our study was to evaluate the cytotoxic activity of the following L compounds: six complexes of Zn (II)/Au (I) and Zn (II)/Ag (I) with Salen, Salampy and Salampy and eight complexes of Cu (II) and Co (II) with Schiff bases derived by a condensation reaction of o-Vanillin with S-Tyrosine, L-Threonine, DL-Tryptophan or L-Serine. Model systems were used six permanent cell lines: MCF-7 and MDA-MB-231 (human breast cancer); HeLa (human cervical carcinoma); LACC-SF-Mc29 (chicken hepatoma); LSR-SF-SR (rat sarcoma) and Lep-3 (non-tumor human embryonic fibroblastoid cells). The investigations were performed by MTT test, neutral red uptake cytotoxicity assay, crystal violet staining, double staining with propidium iodide and acridine orange, comet assay, Annexin V - FITC test (in short-term experiments, 3-72 h, with monolayer cultures) and colony-forming method (in long-term experiments, 30-40 days, with 3D cell colonies). The compounds were examined in ROS generating systems, DPPH test was also performed. Our results indicate that the complexes investigated decrease viability and proliferation of the treated cells in a time- and concentration-dependent manner. The most pronounced cytotoxic agents are Zn (II)/Au (I) complexes with Salen, Salampy and Saldmen (active in the concentration range 0.05-5 µg/ml), followed by Zn (II)/Ag (I) complexes of the same ligands (active in the concentration range 1-20 µg/ml). The CC50 of Zn (II)/Au (I) and Zn (II)/Ag (I) complexes are lower than those of cisplatin. Cu (II) complexes are effective applied at concentrations of 10-200 µg/ml. Co (II) complexes show the lowest rate of cytotoxicity (active in a concentration range 50-400 μg/ml). Cu (II) and Co (II) complexes do not express antioxidant activity.

## Biography

Radostina Ivaylova Alexandrova has graduated with Honors in Biochemistry and Microbiology at Sofia University "St. KI. Ohridski" (SU). She has completed her MSc and PhD in Virology, and she is working as a Lecturer in SU and PhD School of BAS. She has published 160 papers, 550 abstracts, and three book chapters. Her Post-doctoral training was in Slovakia, Hungary and Denmark. She is a leading Researcher in five national and 10 bilateral projects, MC Member of five COST Actions, and she is a Member of Union of Scientists in Bulgaria, Bulgarian Society of Anatomy, Secretary-Treasurer of the Immunological Society, Member of the Organizing/Scientific Committees of 45 scientific forums, Editor/Member of Editorial Boards of two national and four international journals, and Editor of the proceeding books of two workshops.

rialexandrova@hotmail.com

## **Notes:**

<sup>&</sup>lt;sup>1</sup>Bulgarian Academy of Sciences, Bulgaria

<sup>&</sup>lt;sup>2</sup>Sofia University, Bulgaria

<sup>&</sup>lt;sup>3</sup>Romanian Academy, Romania