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Ru(III) complexes with schiff bases as promising cytotoxic agents in cultured human cancer cells

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A wide range of Schiff bases and especially their metal complexes have been reported to exhibit promising antitumor activity. In addition, there are data confirming the anticancer potential of various Ru(II) and Ru(III) complexes in model systems *in vitro and in vivo*. The aim of our study was to evaluate the cytotoxic activity of six newly synthesized ruthenium(III) complexes with Schiff bases resulted from the condensation reaction of salicylaldehyde with ethylenediamine (H2Salen), 1,3-diaminopropane (H2Salpn) and 1,2-phenylenediamine (H2Salphen), respectively; and from the condensation reaction of o-vanillin with ethylenediamine (H2Valen), 1,3-diaminopropane (H2Valpn) and, respectively 1,2-phenylenediamine (H2Valphen). Cell lines established from human breast cancer (MCF-7, MDA-MB-231) and cervical carcinoma (HeLa) as well as non-tumor human embryonic fibroblastoid cells (Lep-3) were used as model systems in our investigations. The effect of the compounds on cell viability and proliferation was examined by thiazolyl blue tetrazolium bromide (MTT) test, neutral red uptake cytotoxicity assay, crystal violet staining, double staining with acridine orange and propidium iodide, hematoxylin and eosin staining, AnnexinV/ICH - DAB and/or AnnexinV/FITC, colony-forming method. The compounds were applied at a concentration range of 5-100 μg/ml for 24-72 h (in short-term experiments, with monolayer cultures) and 25-30 days (in long-term experiments, with 3D cancer cell colonies). The results obtained revealed that the examined metal complexes reduced significantly viability and/or proliferation of the treated cells in a time - and concentration - dependent manner.

Biography

Radostina Alexandrova has completed her graduation with Honors in Biochemistry and Microbiology from Sofia University "St. Kl. Ohridski" (SU) in 1991. She has obtained her MSc and PhD degrees in Virology; and Post-doctoral training in Slovakia, Hungary, Denmark, Iceland. She is a Lecturer in SU and PhD School of Bulgarian Academy of Sciences (BAS) and Team-Leader in the Department of Pathology, IEMPAM-BAS. She has published more than 150 papers in reputed journals and conference proceedings.

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