

Metal [Zn(II), Co(II), Ni(II)] complexes with kojic acid: do they help us to fight against cancer?

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Abstract

The aim of our study was to evaluate the influence of newly synthesized complexes of Zn(II), Co(II) and Ni(II) with kojic acid on viability and proliferation of cultured human (HeLa cervical carcinoma), rat (sarcoma LSR-SF-SR) and avian (liver cancer LSCC-SF-Mc29) cancer cells. Short-term experiments (24-72 h, with monolayer cell cultures) by thiazolyl blue tetrazolium bromide (MTT) test, neutral red uptake assay (NR), crystal violet staining (CV), double staining with acridine orange and propidium iodide, AnnexinV/FITC method as well as long-term experiments (14 days, with 3D cancer cell colonies) by 3D-colony forming method were carried out to investigate the cytotoxic activity of the compounds. The results obtained revealed that the compounds examined decreased viability and inhibited 2D and 3D growth of the treated cells in a time- and concentration-dependent manner. Co(II) complex with kojic acid (CoKoj) was found to be the most promising cytotoxic agent in human HeLa and rat LSR-SF-SR cells whereas ZnKoj showed the highest effectivity in chicken LSCC-SF-Mc29 cells. NiKoj exhibited the lowest cytotoxicity. Cytopathological changes and apoptosis were observed in the cells cultivated in the presence of the compounds tested.

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Speaker Publications:

1. Effect of Cellulose Microfiber Silylation Procedures on the Properties and Antibacterial Activity of Polydimethylsiloxane; Coatings /Volume 10/ Issue 6
2. Spectral properties and biological activity of La(III) and Nd(III) Monensinates; Open Chemistry/Volume 17/Issue 1
3. Calcium Phosphate Incorporated Bacterial Cellulose-Polyvinylpyrrolidone Based Hydrogel Scaffold: Structural Property and Cell Viability Study for Bone Regeneration Application; Polymers/Volume 11/Issue 11
4. Polyzwitterionic hydrogels as wound dressings with enzymatic debridement functionality for highly exuding wounds; Polymer International/Volume68/ Issue9
5. Surface Functionalization of Cotton Fabric with Fluorescent Dendrimers, Spectral Characterization, Cytotoxicity, Antimicrobial and Antitumor Activity; Chemosensors /Volume 7/ Issue 2

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Biography:

Prof. Radostina Alexandrova has graduated with honors in Biochemistry and Microbiology, Sofia University "St. Kl. Ohridski" (SU) in 1991; MSc and PhD in Virology; Postdoctoral training in Slovakia, Hungary, Denmark, Iceland;