

Anti-Cancer drug NSC-631570 (Ukrain): Induction of the apoptosis in cancer cells

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In the study on the erythroleucemia cells K-562, it was revealed NSC-631570 to bring about the bimodal death of cancer cells. At lower concentrations of NSC-631570, cancer cells die in as a consequence of apoptosis. At higher concentrations, the formation of microtubules is inhibited and polyploidy occurs.

In the tests on human cervix carcinoma cells HeLa, squamous carcinoma cells WHCO5, normal kidney cell line Graham 293, and transformed kidney cell line Vero from African green monkey the researchers of the University of Pretoria, South Africa revealed NSC-631570 'is selectively toxic to malignant cells by causing a metaphase block which is characterised by abnormal chromosomal distribution, and results in the formation of micronuclei and in apoptosis.

The scientists of the Eberhard Karl University (Tübingen, Germany) investigated the effect of NSC-631570 on the cell survival, the cell cycle modification and the apoptosis induction alone and combined with radiation (IR). They discovered NSC-631570 combined with IR increased the toxicity against the cell lines CCL-221 and U-138MG. The normal human skin and lung fibroblasts were protected from the damaging effects of IR.

Estimating the cell proliferation according to the BrdU uptake in the cell lines AsPC1, BxPC3, MiaPaCa2, Jurkat, and THP-1 and the cell cycle phases by means of Giemsa staining, the authors established NSC-631570 at a dose of 10 µg/ml brought about a considerable accumulation of cancer cells in the G2/M phase after 24 h incubation. The apoptosis rate in the peripheral mononuclears was similar at the same incubation conditions. Moreover, the mitogene stimulated lymphocytes showed increased blastogen reaction.

Effect of NSC-631570 on cell survival and apoptosis in the androgen-independent prostate cancer cell line PC-3 was studied. Cell viability was assessed using the dimethyl thiazolyl tetrazolium bromide (MTT) method in PC-3 cells after treatment with Ukrain. The IC50 value was observed in 10 µg concentration of Ukrain. Bax, Bad, and FasL mRNA expression was analyzed by reverse transcriptase-polymerase chain reaction, and protein expressions of p-Akt, Bcl-2, and caspase 10 were determined by western-blot analysis. Nuclei were stained with 4',6-diamidino-2- phenylindole, dihydrochloride (DAPI). NSC-631570 significantly increased the pro-apoptotic mRNA expression of Bad, Bax, and FasL; decreased the cell survival protein p-Akt and the anti-apoptotic protein Bcl-2; and increased the protein levels of cleaved poly(ADP)-ribose polymerase (PARP) and caspase-10. The results of this study suggest that NSC-631570 decreases the cell survival of androgen-independent prostate cancer cells.

Speaker Biography

Wassil Nowicky, Director of "Nowicky Pharma" and President of the Ukrainian Anti-Cancer Institute (Vienna, Austria). Has finished his study at the Radiotechnical faculty of the technical University of Lviv (Ukraine) with the end of 1955 with graduation to "Diplomingenieur" in 1960 which title was nostrificated in Austria in 1975. Inventor of the anticancer preparation on basis of celandine alkaloids "NSC-631570". Author of over 300 scientific articles dedicated to cancer research. Dr. Wassil Nowicky is a real member of the New York Academy of Sciences, member of the European Union for Applied Immunology and of the American Association for scientific progress, honorary doctor of the Janka Kupala University in Hrodno, doctor "honoris causa" of the Open international university on complex medicine in Colombo, honorary member of the Austrian Society of a name od Albert Schweizer. He has received the award for merits of National guild of pharmacists of America. the award of Austrian Society of sanitary, hygiene and public health services and others.

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