Wassil Nowicky, J Cancer Sci Ther 2018, Volume: 10
DOI: 10.4172/1948-5956-C9-147

International Conference on

Cancer Diagnosis & Treatment

August 02-03, 2018 | Oslo, Norway

Radioprotective effect of the anti-cancer preparation NSC-631570 (Ukrain)

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When NSC-631570 has been used in clinic, it was observed that the patients treated with this drug tolerate the concomitant radiotherapy much better. The adverse effects of this aggressive treatment modality were significantly reduced to minimal. This gave reason to study radioprotective properties of NSC-631570 in the *in vitro* and *in vivo* tests. It was proven that the radioprotective effect of NSC-631570 was far superior compared to such of its raw materials taken separately, both measured by survival of mice irradiated by different doses and by the protection coefficient. For example, at a dose of 5.25 Gy protection coefficient of NSC-631570 was 95.0±4.6 vs. 50.8±4.6 in the control. These observations suggested that the radioprotective effect of Ukraine differs significantly from such of its raw materials. The radioprotective effect of NSC-631570 was also studied and confirmed on *in vitro* models on the human skin fibroblasts HSF1 and HSF2 as well as lung fibroblasts CCD32-LU. As evaluation parameters were chosen cytotoxicity, apoptosis induction, cell cycle course and the expression of TP53 and p21. Additionally, following malignant cell lines were used like MDA-MB-231 (human breast tumor), PA-TU-8902 (pancreas cancer), CCL-221 (colorectal cancer) and U-138MG (glioblastoma). The cytotoxicity of NSC-631570 was time and dose dependent. The combination of NSC-631570 plus ionizing radiation (IR) enhanced toxicity in CCL-221 and U-138MG cells but not in MDA-MB-231 and PA-TU-8902 cells. Most strikingly, a radioprotective effect was found in normal human skin and lung fibroblasts. Flow cytometry analyses supported differential and cell line specific cytotoxicity of NSC-631570. CCL-221 and U-138MG cells accumulated in G2 after 24h treatment with NSC-631570, whereas no alteration was detected in the other tumor cells and normal fibroblasts. Differential effects of NSC-631570 in modulating radiation toxicity of human cancer cell lines and its protective effect in normal human fibroblasts suggest that this agent may be beneficial for clinical radiochemotherapy.

Biography

Wassil Nowicky is the Director of "Nowicky Pharma" and President of the Ukrainian Anti-Cancer Institute (Vienna, Austria). He has finished his study at the Radiotechnical Faculty of the Technical University of Lviv (Ukraine) by the end of 1955 and Graduation in Diplom-Ingenieur in 1960 which title was nostrificated in Austria in 1975. He completed the degree of Doctor Techniques. He is the Inventor of the anticancer preparation on basis of celandine alkaloids "NSC-631570". He has more than 300 scientific articles dedicated to cancer research. He is a Member of the New York Academy of Sciences, a Member of the European Union for Applied Immunology and of the American Association for Scientific Progress, an Honorary Doctor of the Janka Kupala University in Grodno, an Honorary Doctor of the Open International University for Complementary Medicine in Colombo, an Honorary Member of the Austrian Society with a name of Albert Schweitzer. He has received the award for Merits of National Guild of Pharmacists of America, the award of Austrian Society for sanitary, hygiene and public health services and others.

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