

# The immune modulating properties of the anti-cancer preparation NSC-631570

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## Abstract

Unusual for an anticancer agent NSC-631570 possesses some distinct immune properties. It was Prof. Andrejs Liepins of the St. John's Memorial University, St. John's, Canada who first pointed to this interesting fact. In the work with the C57BL/6 mice he revealed NSC-631570 to be an effective biological response modifier (BRM). After incubation with NSC-631570 the lytic activity of the splenic lymphocytes from the alloimmunised mice increased up to 48 fold (fig. 4). The immune modulating effect of NSC-631570 was studied in several studies in mice. Repeated subcutaneous injections of NSC-631570 to mice infected with the twofold LD50 of *E. coli*, *S. aureus*, or influenza virus increased the survival rate of the animals significantly. When human lymphocytes were incubated with phytohemagglutinin (PHA) and NSC-631570, increased absorption of 3H-thymidin in the cells was observed. The authors point out the strong synergetic effect of NSC-631570 and phytohemagglutinin. NCS-631570 induces immunogenic death of B16 melanoma cells and could restore antitumor activity of hypoxia-polarized macrophages. It suggests that NSC-631570 can be used for multimodal tumor therapy not only to kill the tumor cells, but also to stimulate a specific immune response to keep residual tumor (stem) cells and metastases under control. To investigate the adjuvant and immunomodulatory effects of the *S. aureus* cytoplasmic membrane extraction (CPM) in mono- and combined anticancer therapy outbred mice were transplanted with ascite and solid form of Ehrlich carcinoma followed by sixday course of bacterial polymer used alone or in combination with cytotoxic anticancer drug NSC-631570. To estimate adjuvant effect tumor growth dynamics were evaluated, to characterize immunomodulating effect the number of circulating mononuclear phagocytes and their phagocytic activity were analyzed by flow cytometry. Our results suggest synergistic effect of PAMP and antineoplastic drug NSC-631570, that was accompanied by positive immunomodulation. The effects of cancer-selective drug NSC-631570 (Ukraine) used alone and in combination with pathogenassociated polymers of Gram-positive (peptidoglycan, lipoteichoic acid, and cytoplasmic membrane extraction of *Staphylococcus aureus*) and Gram-negative (*Escherichia coli* lipopolysaccharide) bacteria on mouse peritoneal macrophage metabolic activity in vitro are investigated. It is shown that NSC-631570, as used alone, causes a moderate enhancement of oxidative metabolism and arginase activity of intact peritoneal macrophages. The co-modulatory effect of the preparation depends on the initial functional state of phagocytes.

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## Biography

Wassil Nowicky is the Director of Nowicky Pharma and President of the Ukrainian Anti-Cancer Institute (Vienna, Austria). He finished his study at the Radiotechnical Faculty of the Technical University of Lviv (Ukraine) in 1955 with graduation to "Diplomingeniueur" in 1960 which title was nostrificated in Austria in 1975. He became the very first scientist in the development of the anticancer protonic therapy and is the Inventor of the preparation against cancer with a selective effect on basis of celandine alkaloids "NSC-631570". He used the factor that cancer cells are more negative charged than normal cells and invented the celandine alkaloid with a positive charge thanks to which it accumulates in cancer cells very fast. He has been invited as

an Honorable Speaker in many scientific international congresses and conferences in USA, Australia, Japan, UAE and Europe. He has over 300 scientific articles dedicated to cancer research. He is a Member of the New York Academy of Sciences, European Union for Applied Immunology and of the American Association for Scientific Progress, Honorary Doctor of the Janka Kupala State University in Grodno, 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 of merits from National Guild of Pharmacists of America, the Award of Austrian Society of Sanitary, Hygiene and Public Health Services and others.