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Biotechnological approaches and methods for the new generation production of anti-carcinogenic drugs

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80-90% of cases of human cancer are caused by the action of chemical carcinogens from the environment and by lifestyle characteristics. One of the groups of such chemical carcinogens is polycyclic aromatic hydrocarbons (PAH). Analysis of the literature suggests that the induction of a specific immune response against PAH by PAH-protein conjugates and corresponding anti-idiotypic Abs can lead to inhibition of the pathological effect of PAH. The same Abs are applicable for the diagnosis of cancer in the early phases of development. With the purpose of further use of Abs in the clinic, a spectrum of recombinant Abs against PAH was obtained by screening with benzo[a]pyrene-BSA conjugate of the phage naive library of human Abs for the preparation of idiotypic single-chain Ab (Ab1). It was used to screen the same phage Abs library for the production of anti-idiotypic single-chain Ab (Ab2). As a result, unique Abs were obtained: Seven human Abs1 and seven human Abs2. Computer models of PAH interaction models with Ab1 and models of binding Ab1 to Ab2 were constructed. The ELISA method was used to get primary data on the level of Ab1 and Ab2 in benzo[a]pyrene-BSA immunized mice and in blood sera from patients with lung cancer in comparison with healthy people. The preliminary results quantitative ELISA and quantitative Bio-Plex 200 were obtained.

Biography

Valentin A Ustinov has completed his PhD from Moscow State University, Russia and Postdoctoral studies first from the University of Illinois at Chicago, USA and then from the Cleveland Clinic Foundation, Cleveland, USA. He has worked as a Research Associate in the Cleveland Clinic Foundation from 2005-2011. Presently he is the Head of Biotechnology Laboratory in the Federal State Scientific Institute, Federal Research Centre Coal and Coal Chemistry, Siberian Branch of the Russian Academy of Sciences, Institute of Human Ecology, Kemerovo, Russia. He has published more than 20 papers in reputed journals.

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