Artem E Studennikov et al., J Blood Disord Transfus 2018,Volume:9
DOI: 10.4172/2155-9864-C3-038

Idiotypic and anti-idiotypic human single-chain antibodies against polycyclic aromatic hydrocarbons for quantitative calculation of endogenic antibodies in human blood serum

Artem E Studennikov
Federal State Scientific Institute- FRC CCC- SB RAS, Russia

Co-Authors
Ivan S Grebenschikov, Andrey N Glushkov and Valentin A Ustinov
[1]Federal State Scientific Institute- FRC CCC- SB RAS, Russia
[2]Institute of Human Ecology, Russia

Eighty to ninety percent (80-90%) 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 (PAHs). Analysis of the literature suggested that the induction of a specific immune response against PAHs by PAHs-protein conjugates and corresponding idiotypic/anti-idiotypic antibodies (Abs) could lead to modulation of the pathological effect of PAHs. The same Ab's are applicable for the diagnosis of cancer in the early phases of development. This study was done with the purpose of further use of Ab's in the clinic, to get spectrum of recombinant Abs against PAHs and develop quantitative method for endogenic calculation of Ab's against PAHs in human blood serum. Human idiotypic and anti-idiotypic single-chain antibodies against benzo[a]pyrene were obtained from the phage library and characterized. Two quantitative methods for endogenic calculation of Ab's against PAHs in human blood serum were developed based on competitive ELISA and multiplex analysis (Bio-Plex 200). It is proposed to use recombinant antibodies against benzo[a]pyrene in the prediction of lung cancer, as well as in immunoprophylaxis of cancer.

Biography

Artem E Studennikov has completed his MSc in Genetics from Federal State Educational Institute of Higher Professional Education, Kemerovo State University, Kemerovo, Russia and is now preparing his Post-doctoral thesis. He is the Research Specialist of Federal State Scientific Institute, Federal Research Centre Coal and Coal Chemistry, Siberian Branch of the Russian Academy of Sciences, Institute of Human Ecology, Kemerovo, 650065, Russia. He has published six papers in reputed journals and made his presentations on six international immunological meetings.

studennikovae@ihe.sbras.ru

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