Open Access
www.openaccessjournals.com

Journal of Pharmaceutical Toxicology

Production of membrane receptor glycoproteins and immunoglobulins by non-myeloid and non-lymphoid cell types on the influence of appropriate internal (genetic), epigenetic and external factors

Iskra Sainova

Bulgarian Academy of Sciences (BAS), Bulgaria

Biography

The main goal of my work is directed to development of experimental models for balanced activity between oncogenes and tumor-suppressor genes, as well as between the protein products of both gene types, on cellular and organism levels. I graduated Bachelor degree on Molecular Biology in 1997 at the Faculty of Biology to Sofi a University "St. Kl. Ohridsky" in Sofi a, Bulgaria, and Master-degree on Genetics in 1998 at the Department of Medical Cytogenetics to Sofi a University hospital "Joanna Queen" in Sofi a, Bulgaria, with a Diploma- work thesis "Structural and number chromosomal aberrations in patients with polygene diseases and disorders". My PhDthesis was prepared at the Department of Oncovirology to the Institute of Experimental Pathology and Parasitology (IEPP) to Bulgarian Academy of Sciences (BAS) in Sofi a, Bulgaria, in the period 05.04.1999 - 23.04.2004, with a title "Investigation on the replication of vaccine avipoxviral strains in different cell-culturesystems". In this way, a possibility about production of immunoglobulins/ antibodies and membrane glycoprotein receptors by non-lymphoid and non-myeloid cellular types in appropriate conditions was recently suggested.

Abstract

Experimental models for production of membrane glycoproteins and immunoglobulins (antibodies) by appropriate internal (genetic), epigenetic and external stimulation were developed. Low initial infectious titers (high initial dilutions of viral suspensions, respectively) of attenuated by many passages vaccine strains of heterologous for mammals and mammalian cells avian viral species were applied. Sub-populations of mammalian cell cultures, inoculated with the so described viral suspensions, were freezed after addition of cryo-protector Dimethylsulfoxide (DMSO), subsequently thawed and re-incubated. Also, total lysates from in vitro-cultures of normal mouse cells, mouse malignant myeloma cells and mixed of both cellular types. Analogically, total extracts from rat brain and pancreas were prepared (control probes). Separate aliquots were passed through GSH-Agarose Columns for selection of molecules with affi nity to Glutathione reduced form – GSH. Another aliquot of the total extract from each anatomic organ was mixed with total extract from in vitro-incubated cells, containing additionally-inserted copy of rat tumor-suppressor gene scgn, coding the hormone-like protein Secretagogin (SCGN) plus GST-tag by transfection with appropriate recombinant DNA-vector. Subsequently, the so prepared lysate mixtures were passed through GSH-Agarose Columns for selection of molecules with affinity to SCGN protein. The anti-ganglioside antibodies titers were estimated by ELISA. Activated fusion process on the influence of DMSO was proved by the noted signs of activated cell proliferation in the virus inoculated cells, as increased cell density and formation of internal "islands" in the cellular monolayer, unlike the noninoculated cell cultures. One of the possible explanations could be eventual transfer of nucleotide (DNA- or RNA-) sequences from viral to cellular genome as a result of activated fusion between them. The last was probably a result besides of the DMSO presence and of the drastic temperature changes also helped by the appearance of membrane receptor glycoproteins in the presence of the viral particles. Here again, these data could be explained with eventually activated production of membrane receptor glycoproteins on the influence of the malignant cells. Statistically higher titers of anti-ganglioside antibodies than the titers of the respective gangliosides were established in the most of the tested samples. The data obtained confirmed the proved capability of non-myeloid and non-lymphoid cellular types to produce membrane receptor glycoproteins and immunoglobulins, when appropriate internal (genetic), epigenetic and external conditions are available. This ability could be explained with activation of the expression of respective genes or with acquired additional functions of some enzyme or cytoskeleton components.

Citation: Iskra Sainova, *Production of membrane receptor glycoproteins and immunoglobulins by non-myeloid and non-lymphoid cell types on the influence of appropriate internal (genetic), epigenetic and external factors*, RWPS 2020, Rheumatology-Immunology,Women's Health and Pharma Science, September 21, 2020 , Webinar