

4th International Conference on Neurology and Healthcare

International Conference on

Clinical and Experimental Neuropsychology

3rd World Drug Delivery and Formulations Summit

June 24-25, 2019 | Rome, Italy

Strategy of targeted pharmacological regulation of intracellular signal transduction in regenerativecompetent cells - A new direction of therapy in regenerative medicine

Gleb N Zyuz`kov

Russian Academy of Sciences, Russia

Journal of Neurology and Clinical Neuroscience

Advances in the field of cellular technologies have led to the possibility of developing a new direction of targeted therapy in regenerative medicine - "Strategy of Pharmacological Regulation of Intracellular Signal Transduction in Regenerator-competent Cells" (Patent RU No 2599289, 2016). The role of NF- κ B, IKK, PKC, PKB, PI3K, ERK $\frac{1}{2}$, p38, adenylate cyclase, PKA, JAKs, STAT3, JNK, p53 in the realization of functioning progenitor elements of different classes and cells of tissue microenvironment was studied in vitro by means of cultural, immunological and other methods. On the models of posthypoxic encephalopathy, skin wound and cytostatic myelosuppression in experimental animals the therapeutic effects and mechanisms of action of modifiers of signal molecules activity were studied. The specificity of the involvement of a number of signaling molecules in the regulation of neural stem cells of brain were shown on the model of encephalopathy. An algorithm and approaches for estimating the potential efficiency and many-sided selectivity of the modifiers of signaling molecules activity as targeted hemostimulators were developed. The effectiveness of various targeted pharmacological agents determined by the selective effect on different types of regenerative-competent cells was demonstrated on the models of cytostatic myelosuppression of various genesis. The perspective of using intracellular signaling molecules in regenerative-competent cells as targets of drugs for regenerative medicine was shown.



Figure 1: The participation of signaling molecules in the stimulation of proliferation multipotential mesenchymal stem cells. Simple arrows: intracellular pathways involved in activation of functions of mesenchymal precursors under optimal vital activity; dotted arrows: pathways of suppression of mesenchymal precursor cells; thick arrows: pathways of activation functions of mesenchymal progenitor cells under the influence of regulatory factors (redundant pathways).