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The Supportive Role of Interferon- γ in Retinal Differentiation of Mesenchymal Stem Cells

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Retinal degenerative disorders represent a group of diseases causing a decreased quality of vision or even blindness. So far, there is still no effective treatment protocol available for many of retinal disorders. A perspective approach for these patients represents stem cell-based therapy. Mesenchymal stem cells (MSCs) are a perspective candidate due to their possibility to migrate to the site of injury, differentiate into multiple cell types and produce a number of trophic factors. In this study we analysed the potential of murine bone marrow-derived MSCs to differentiate into cells expressing retinal markers and tested the possibility to express neurotrophic factors by differentiated MSCs. MSCs were cultured with retinal extract and supernatants simulating the environment of retinal damaged for 7 days. MSCs cultured in such conditions differentiated to the cells expressing retinal cell markers. To identify a supportive molecule in the supernatant from activated spleen cells, MSCs were cultured with retinal extract in the presence of various T-cell cytokines. The expression of retinal markers was enhanced only in the presence of IFN- γ , and the supportive role of spleen cell supernatants was abrogated with the neutralization antibody anti IFN γ . The results show the supportive role of IFN- γ in differentiation of MSCs to the cells expressing retinal cell markers and the enhanced ability of differentiated cells to express growth factors.

Biography:

Barbora Hermankova finished her PhD in the field of Immunology at the Faculty of Science, Charles University in Prague in September 2018. Her dissertation thesis was prepared at Department of Transplantation Immunology, Institute of Experimental Medicine Academy of Sciences of the Czech Republic. Her work is focused on the study of mesenchymal stem cells and their perspectives in the treatment of retinal diseases.