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Efficient expression of human IL-10 following the optimization of transient transfection of canine adipose tissue-derived mesenchymal stem cells

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Mesenchymal stem cells (MSCs) show enormous potential for cell-based therapy in the treatment of various diseases. In the present report, the genetic manipulation of canine MSCs isolated from adipose tissue has been investigated with the aim of enhancing their therapeutic potential. Since MSCs are regarded as hard-to-transfect cells, we initially optimized the transient transfection efficiency of these cells using the LacZreporter vector and in situ β-galactosidase staining. Next by applying optimized conditions we transfected MSCs with pCIneoIL-10 plasmid that contains the cDNA of human IL-10, the potent immunosuppressive cytokine which is not produced by MSCs at a significant level. Using an ELISA assay in which the level of human IL-10 from the supernatant samples of transfected canine MSCs was quantified, the successful expression of transgene was confirmed. The obtained results provide a working platform for further studies related to the reinforcement of MSCs-mediated therapeutic impact and the targeted delivery of various biological agents to disease sites.

Biography

Gordana Nikcevi is a Senior Research Associate, Laboratory for Molecular Biomedicine at Institute of Molecular Genetics and Genetic Engineering (IMGGE), University of Belgrade, Serbia. She is also Scientific Coordinator/Assistant Coordinator of the EU FP7 Project (FP7-REGPOT: Strengthening the Research Potential of IMGGE through Reinforcement of Biomedical Science of Rare Diseases in Serbia-en route for innovation; SERBORDISinn). Her research interests are studying the molecular basis of various rare diseases, the regulation of eukaryotic gene expression and genetic variants relevant for the optimization of drug therapy in the treatment of inflammatory diseases and studying the approaches to increase therapeutic capacity of animal mesenchymal stem cells.

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