

MESENCHYMAL STEM CELLS AND MOLECULAR MECHANISMS, FEASIBLE CANDIDATES FOR NEUROPROTECTION AND REGENERATION

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ABSTRACT

Cell therapy is an attractive strategy for protection or restoration of degenerative diseases. Human bone marrow-derived mesenchymal stem cells (BMSCs) reservoirs of the reparative mechanisms, exhibit a beneficial population for treatment of neurodegenerative diseases. The key players involved in BMSC tropism are up-regulated signals after ischemia/reperfusion or inflammation. Molecular signals also induced by injuries, trigger BMSC migration, homing and invasion. Cytokines and chemoattractant in particular VEGF, G-CSF, PDGF, FGF, CCRs and matrix proteases imply pivotal roles in reparative pathways. Under homing, BMSCs induce immunomodulatory and regenerative mechanisms as well as milieu-dependent differentiation to express phenotypes of the local microenvironment, great potentials for treatment of neurodegenerative and ischemic diseases.

KEYWORDS: Neuroprotective, Immunomodulator, Genetic Reprogramming, Modulating Hypoxia.