

Differentiation of human endometrial stem cells into oligodendrocyte by overexpression of microRNA 338

Jafar Ai

Tehran university, Iran

Human Endometrial-derived stem cells (EnSCs) are the abundant and easy available source for cell replacement therapy. Oligodendrocytes are myelinating cells in the central nervous system (CNS) that form the myelin sheath of axons to support rapid nerve conduction. In CNS disorders, such as stroke, multiple sclerosis and spinal cord injury, demyelination of axons contributes to functional deficit. miRNAs have a critical role in oligodendrocyte development including cell proliferation, differentiation and myelin formation. MiR-338 is necessary to promote oligodendrocyte differentiation by repressing negative regulators of oligodendrocyte differentiation including PDGFRa, SOX6.

The EnSCs after treating with FGF2, EGF, PDGF-AA(20ng/ml) and T3(30ng/ml) for 18 days, were infected by miR-338. 4days after infection, cells were collected and analyzed for expression PDGFRa, olig2, A2B5 by qRT-PCR and immunocytochemistry. The flow cytometric analysis showed that EnSCs were positive for CD90, CD105, OCT4, CD44, CD146 and were negative for CD31, CD34, CD133, CD45. The result showed in the infected cells, expression of PDGFRa compared with non infected and control cells significantly decreased and expression other oligodendrocyte cells markers such as Nestin, Olig2, A2B5 in the level of mRNA and protein increased in compared with control and non infected cells. The EnSCs can differentiate to oligodendrocyte cells by overexpression of miR-338 and may convince to consider these cells as a unique source for cell therapy of neurodegenerative disease.

Biography

Jafar Ai is Professor of Tissue Engineering in Tehran University of Medical Sciences. He has completed his Ph.D in Anatomical Sciences in 2000 from Shiraz University and postdoctoral studies in Three-Dimensional Tissue Culture and Adult Stem Cells from Toronto University. He is the head of Department of Tissue Engineering. His research interests are in Three-Dimensional Tissue Culture, Adult Stem Cell, Electromagnetic Field. He has published more than 35 papers in reputed journals and serving as an editorial Board member of reputed.

jafar_ai@tums.ac.ir