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Menstrual blood derived stem cells as a renewable source of adult stem cells: Features and advantages

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Menstrual blood derived stem cells (MenSCs) can be easily obtained from women's menstrual blood in a non-invasive technique without ethical issues of other stem cell types. These multipotent cells have the ability to differentiate into various functional cells including osteocytes, adipocytes, cardiomyocytes, respiratory epithelial cells, neurocytes, myocytes, endothelial cells, pancreatic cells and hepatocytes. No evidence of tumor and ectopic formation or any immune response has been demonstrated after being transplanted into animal models. To determine whether MenSCs outline common features with bone marrow-derived stem cells (BMSCs) or have source-specific peculiarities, we have done a head-to-head comparison of MenSCs with BMSCs in aspect of immunophenotyping, proliferation and differentiation characteristics. The evidence presented here narrates MenSCs are unique stem cell population with higher rate of proliferation and different trans-differentiation potential compared to BMSCs. Probably, it can be attributed to the particular immunophenotypic pattern and special signaling molecules involving in MenSCs development. In addition, we reviewed the possibilities of using MenSCs for diagnosis of diseases and as a novel alternative to current cell sources for cell-based therapies of neurological disorders, myocardial infarction, type I diabetes mellitus, liver cirrhosis, etc. Therefore, this study presents broad insights about possible advantages of MenSCs and their safety/efficacy profile for clinical applications.

Biography

Somaieh Kazemnejad is an Associate Professor and Director of Tissue Engineering department in Avicenna Research Institute where she leads the Regenerative Medicine Group, a multidisciplinary team of researchers including engineers, cell biologists, polymer chemists, clinicians and veterinary surgeons. She completed her PhD from Tarbiat Modarres University of Iran. She is a Clinical Biochemist who is one of very few Iranian academics in the field of regenerative medicine and tissue engineering to have taken a research program from fundamental research through to clinical application utilizing research *in vitro*, *in vivo*, preclinical large animal studies and clinical trials with focus on menstrual blood stem cells. She has published more than 28 papers in reputed journals in the field of tissue engineering and regenerative medicine.

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