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Angiogenesis Properties of the Amniotic Membrane Stem Cells After Cryopreservation

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Human placenta supports the growing fetus and consists of several layers the inner most of them is a membrane with unique capacities. This layer which is called the Amniotic membrane (AM) develops two different types of pluripotent stem cells which have previously shown to express angiogenesis regulatory properties that make them great candidates for cancer and cardiac researches.

In order to store and transfer these cells for experimental and possible clinical purposes, cryopreservation is a necessary procedure. However it is debatable whether the cryopreservation negatively influences the Amniotic membrane Stem Cells (AMSCs) characteristics or not. In this study AMSCs were cryopreserved and stored for 6 months at -80 °C. The effect of cryopreservation on these stem cells' properties was evaluated by comparing the angiogenesis activity of the thawed AMSCs and fresh AMSCs in an animal model. The length and number of branches of formed capillaries were measured via intra-vital microscopy after 5 and 15 days. The amount of angiogenesis promoting factors IL-8 (interleukin-8) and TIMP-2 (Tissue Inhibitor of Matrix Metalloproteinase-2) that are believed to be produced mainly by AMSCs were evaluated using ELISA assay. The effect of cryopreserved AMSCs on angiogenesis was reported to be of similar power to that of fresh cells. These promising results can act as a basis to confirm cryopreservation as a proper and reliable method of storing AMSCs in different clinical and research settings.

Biography

Mahsa Khayat-Khoei has completed her medical education and received her MD degree from Shahid Beheshti University of Medical Sciences in 2012. She will soon receive her MBA degree, and is a research assistant at University of Texas Health Science Center. She has worked as a researcher and clinical trainee at Baylor Saint Luke's Medical Center, as well as a research trainee at MD Anderson Cancer Center in Houston, Texas. She has a patent, several publications in reputed journals and has presented her research in respectable national and international meetings. She has been serving as an editorial board member of several medical journals. Her main research interest is on Amniotic Membrane derived Stem Cells and their different properties.

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