

An overview of the mesenchymal stem cells uses in skin tissue engineering and wound healing

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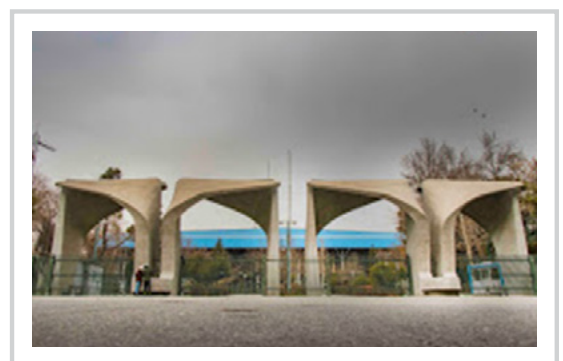
Abstract

One of the most important goals of tissue engineering is the quick and proper repair of the dermal or full thickness injuries or burns, in this regard; cell source has an important role in designing the considered tissue or organ. In this study, we want to discussion and comparison of advantages and disadvantages of utilization of BM-MSCs cells in wound healing and skin tissue engineering.

Bone marrow mesenchymal stem cells BM-MSCs are potent in differentiating into multiple cells and tissues and also it can easily be isolated from bone marrow and be used in tissue engineering researches and it shows that using mesenchymal cells improve the healing process. Some researches have been shown that utilizing amniotic membrane grafts combined with marrow mesenchymal stem cells is effective on skin defects in the rabbit. Also BM-MSCs can lead to well-recovered dermal and epidermal layers and the epidermal layer will show mature differentiation and the dermal layer will show thick collagen bundle deposition and well-recovered skin. Miao et al compared placental derived stem cell and BM-MSCs in terms of morphology growth and membrane markers. In burning wounds, the tissue which is designed by MSCs has been shown better healing and keratinization and also less wound contraction and better keratinization and more vascularization. Furthermore the activated mesenchymal stem cells produce trophic effects by secreting a spectrum of bioactive molecules that inhibit apoptosis, prevent scar formation and stimulate angiogenesis. Several trials are undertaken to develop bioengineered wound-healing products and considering the role of MSCs in a wound healing manner, it is important to consider their inclusion.

Biography

I have studied doctorate of veterinary medicine at the University of Tehran. I'm working on my thesis, which is about the evaluation of full-thickness wound healing through stem cells, which is differentiated to keratinocyte and loaded on the collagen scaffold. Moreover, I have worked on numerous projects in a collaboration of cell bank lab in Pasteur Institute of Iran and biomedical research lab at the University of Tehran such as stem cell application in heart ischemia in rabbit animal model under supervision of Professor Mohammad Mehdi Dehghan.



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