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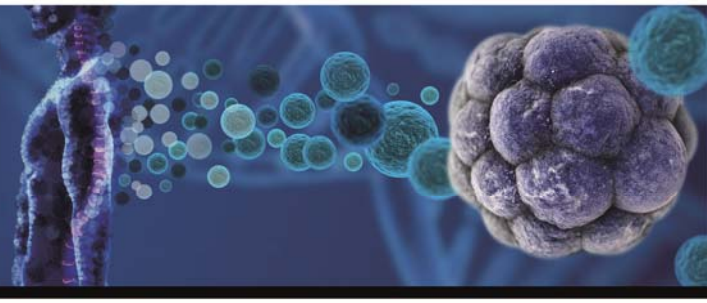

Skin Tissue Engineering

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Abstract

Introduction: The skin, which is the largest tissue in human body, is constructed of three layers epidermis, dermis and hypodermis. It performs a main function in protecting the human body from much chemical and mechanical damage from the surrounding environment. The loss of skin can occur for various reasons, such as thermal trauma, genetic disorders, chronic wounds, burns or even surgical interventions. Because of the low immunogenicity of donor skin and the limited availability of donor skin sources, skin grafts are unable to provide complete recovery of the skin rendering them unsuitable for widespread use. Amniotic membrane has been employed in the treatment of wounds for almost 100 years, beginning with early application of natural amniotic membrane obtained from labor and delivery to various types of burns and wounds. Amniotic membrane (AM), the most internal placental membrane, has unique properties including anti adhesive effects, bacteriostatic, wound protection and pain-reduction properties, as well as epithelialization initialization capacities. AM is widely available and less costly than other bioengineered skin substitutes. **Literature review:** Several years ago, great attempts were made to fabricate substitute human skin. Tissue engineering is an impressive way to develop skin substitutes and improve the wound healing. The clinical application of amniotic membrane not only maintains the structural and anatomical configuration of regenerated tissues, but also contributes to the enhancement of healing through reduction of post-operative scarring and subsequent loss of function and providing a rich source of stem cells. The AM has other biological properties important for TE, including anti-inflammatory, anti-microbial, anti-fibrosis, anti-scarring, as well as reasonable mechanical property and low immunogenicity. Human Amniotic Membrane derived ECM scaffold could be useful in skin tissue engineering due to its physico-mechanical properties, which may improve the quality of wound healing. **Conclusion:** AMsare an excellent membrane for reconstructive surgery because it is easily accessible, ethically acceptable, easy to use, and easily stored without alteration to its therapeutic properties. This review article explains the inherent structure, properties, mechanisms and the potential applications of HAM for skin tissue engineering.

Keywords: Skin Substitutes, Human Amniotic Membrane, Tissue Engineering.