



P98- Human Adipocyte Derived Mesenchymal Stromal Cell Supports Keratinocyte Growth in a Modified Collagen-Hyaluronic Acid Matrix

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Abstract

Objective: Skin loss can occur due to many reasons including burns, diabetic wounds, venous ulcers, trauma, genetic disorders and etc... . Although much progress has been made towards the development of skin engineering but these are not completely efficient and require to improvement. It is known that many types of cells including fibroblasts and bone marrow stem cells improve performance of composite skin substitutes. Here we worked on an autologous construct as a successful skin substitute by culture of human Adipocyte Derived Mesenchymal stem cells (hADMSC) and human keratinocytes on the Hyaluronic acid-collagen matrix (HA-Col). **Methods:** Human ADMSC were purified from liposuction sample and cultured after selection for CD90, CD105 and CD146 by MACS column. The Col matrix was electrospun and augmented with HA. Then the matrix was seeded by ADMSC and cocultured with keratinocyte. The maturation of keratinocytes was measured by cytokeratin 10, CK14 and loricrine antibodies (ICC). **Results:** The obtained results revealed that the designed co-culture has a high potential for human keratinocyte proliferation. Stromal cells can proliferate *in vitro* and invade a collagen matrix to generate new vessels. Keratinocytes cultured with hADMSC expressed Ck 10 and Ck 14 in supra-basal layer. Keratinocytes without ADMSC-support formed only an irregular layer. This suggests that mesenchymal intercellular communications are necessary for proliferation and stratification of human keratinocytes. **Conclusion:** We think that ADMSCs are providing a superior stratum upon which the keratinocytes can anchor and proliferate rapidly. The growth of keratinocytes in this fashion is like a superficial wound. Our data propose ADMSC as an efficient and safe source of feeder cells for the generation of keratinocyte autografts without immunological complications.

Keywords: Coculture, Keratinocyte, Mesenchymal Stem Cell, Regeneration, Skin

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