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Cytokine gene polymorphism (IL-17A G197A, TNF-alpha G308A, IL-6 C174G) and human major histocompatibility complex (HLA DRB1) – specificities control in bronchial asthma

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In the development of non-specific resistance in an immune system, important role belongs to mediators of the said immune system; the pro-inflammatory cytokines, which in turn activates expression of class II HLA-DRB1 on antigen presenting cells (APC) that implement specific immunity. The pathologies of many infectious, autoimmune and malignant diseases are influenced by the profiles of cytokine production in pro-inflammatory (TH1) and anti-inflammatory (TH2) T cells. With TLR (Toll-like receptor) on dendritic cells recognizing PAMP (pathogen-associated molecular patterns); antigens that trigger a cascade of specific antibody and cytokine. Many studies have examined the relationship between cytokine gene polymorphism, cytokine gene expression in vitro, and the susceptibility to and clinical severity of diseases. Our study here tends to, and as extensively as possible, expose the relationship of cytokines gene polymorphism and Human Major Histocompatibility complex with respect to bronchial asthma.

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Adipocyte derived mesenchymal stem cell supports keratinocyte growth in a modified collagen-hyaluronic acid matrix

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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. Secretion of collagen matrix and epidermal differentiation takes place after mesenchymal epithelial communication. Development of the better transplantable dermal layers that support keratinocyte proliferation is very important for therapeutic option. 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. Bi-layer skin culture was generated by using biodegradable Hyaluronic acid-Collagen matrix. To analyze the effects of the hADMSC on the epithelial regeneration, keratinocytes were seeded onto the hADMSC-populated matrix and cultured at 37°C, in a 5% CO₂ and 20% O₂ humidified atmosphere. First, 106 hADMSC were seeded onto the matrix and cultured for 3 days in the basal medium. Then, keratinocytes were overlaid on the hADMSC and cultured for other 7 days in complete keratinocyte medium. We have evaluated the growth behavior of hADMSC and keratinocytes as a co-culture on the Col-HA layer. The obtained results revealed that the designed co-culture has a high potential for human keratinocyte proliferation. Keratinocytes without ADMSC-support formed only an irregular layer. This suggests that mesenchymal intercellular communications are necessary for proliferation and stratification of human keratinocytes. Keratinocytes cultured with hADMSC expressed Ck10 and Ck14 in supra-basal layer. However ADMSC is not a part of normal skin but it could promote the epidermal regeneration as describes previously for the bone marrow stem cell and other progenitor cells. Our data propose ADMSC as an efficient and safe source of feeder cells for the generation of keratinocyte autografts without immunological complications.

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