

CONTACT DERMATITIS AND OCCUPATIONAL DERMATOSES

RECONSTRUCTED HUMAN EPIDERMIS MODELS WITH LANGERHANS CELLS (SKINETHIC RHE-LC)

S Sahuc⁽¹⁾ - V Dioszeghy⁽²⁾ - D Benas⁽¹⁾ - M Liguois⁽²⁾ - L Mondoulet⁽²⁾ - C Pellevoisin⁽³⁾ - Jm Ovigne⁽¹⁾

Episkin, -, Lyon, France⁽¹⁾ - Dbv Technologies, -, Montrouge, France⁽²⁾ - Epsikin, -, Lyon, France⁽³⁾

Background: Langerhans cells are a bridge between skin innate and adaptive immunity and are key players in a wide range of immune-mediated skin disorders. Availability of reconstructed human epidermis containing Langerhans cells opens new possibilities for research and development in dermatology and cosmetics.

Objective: Characterization and application in dermatology research of SkinEthicTM RHE-LC, a new industrial reconstructed human epidermis containing functional Langerhans cells.

Materials and Methods: SkinEthicTM RHE-LC (EPISKIN SA) model is reconstructed on a polycarbonate filter membrane with human primary keratinocytes and human CD34+ progenitor cells. This model is characterized by histology and immunostaining (CD1a, CD207) studies. Functional response of the resident Langerhans cells is assessed by transcriptomic studies (CCR7 et CD86) after topical or systemic exposure of the model to chemical sensitizers (PPD, DNCB).

The relevance of the model to study allergen uptake and activation of the Langerhans cells have been performed by DBV Technologies using FACS analysis of exposed model to OVA-AF488, oxazolone or PBS. OVA-AF488 is applied either directly or with Viaskin® (DBV Technologies) patches used in vivo for epicutaneous immunotherapy (EPIT).

Results: Immunolabelling of histological slices with CD1a and CD207 antibodies show regular repartition of

Langerhans cells in the basal and suprabasal layers of the model. 24h hours after exposure to sensitizers CCR7 et CD86 expression are upregulated reflecting Langerhans cells activation. In the antigen capture challenge, 60% and 90% of LC are positive to OVA for the groups treated with OVA-AF488 and the Viaskin®-OVA-AF488, respectively. The expression of HLA, CD80 and PDL2 was not modified by the treatments in comparison to the inflammatory control oxazolone.

Conclusions: These results show that SkinEthic TM RHE-LC is a functional model of human











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skin able to mimic some mechanisms of human exposure to skin sensitizers. Moreover, SkinEthicTM RHE-LC is useful for mechanistic investigation on antigen delivery in human.



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