
Poster: skin models as alternatives to animal testing

SkinEthic Reconstructed Human Epidermis (RHE) model: development of an alternative method for skin irritation testing

Carine Tornier⁰, Carole Amsellem¹, Mylène Pelleter¹, Jean-Roch Meunier², Anne de Brugerolle de Fraissinette⁰, Nathalie Alépée²

⁰ SkinEthic (Nice) (FR); ¹ Episkin (Lyon) (FR); ² L'Oréal (Aulnays-sous-Bois) (FR)

e-mail: ctornier@skinethic.com

Following extensive optimization and prevalidation studies, ECVAM launched a formal validation study on *in vitro* EpiSkin and EpiDerm reconstructed human epidermis models. In 2007, the EpiSkin model was scientifically validated to fully replace the regulatory Draize skin irritation test (EU B. 4 method; OECD TG 404) on rabbits for R38 classification of skin irritants according to EU classification. A performance standard document was developed by ECVAM for evaluating the relevance (predictive capacity) and reliability (reproducibility within and between laboratories) of a candidate Me-too test method.

The purpose of the present study was to develop such a test method able to discriminate skin irritancy potential of chemicals using the Reconstructed Human Epidermis (RHE) model from SkinEthic.

In Phase I, twenty reference test chemicals (10 irritants and 10 non irritants) were tested to determine whether the validated protocol (15 min chemical exposure followed by 42 hour post incubation time) was appropriate using RHE model. Results showed that both sensitivity and specificity did not exceed 70%. The predictive ability of the test method was therefore considered inadequate and test protocol was refined by extending contact time of test chemical on RHE up to 42 or 60 min. Applying those two protocols, an overall predictive accuracy of 85% was reached (specificity: 80%, sensitivity: 90%). Final evaluation was performed using "42 bis" protocol (42 min contact exposure followed by 42 hours post incubation time before endpoint measurement) leading to higher intra-laboratory reproducibility (>90%).

In Phase II, reliability of the "42 bis" protocol was assessed on 17 liquid and solid additional chemicals resulting in an overall predictive accuracy similar to that of validated, approved test models using MTT as endpoint and a threshold of 50% viability.

The RHE model was considered ready to enter formal interlaboratory validation.

Keywords: alternative, skin irritation, RHE