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Reconstructed Human Epidermis

DESCRIPTION

The *in vitro* Reconstructed Human Epidermis consists of normal human keratinocytes cultured on an inert polycarbonate filter at the air–liquid interface, in a chemically defined medium. This model is histologically and functionally similar to that of the *in vivo* human epidermis.

HISTOLOGY

![Histology comparison](image)

DAYS OF CULTURE 10 / 12 /17

SURFACE FORMATS 0.5 cm² 4.0 cm² HTS 24-well HTS 96-well

ORIGIN Male

CHARACTERIZATION

The reconstructed human epidermis expresses the major differentiation markers (filaggrin and involucrin in granular cell layers, transglutaminase I and keratin 10 in supra basal cell layers and loricrin in upper granular cell layers), as well as expressing the basement membrane markers (type IV collagen; integrin alpha 6, integrin beta 4, antigen BP, laminin I and laminin V).

Free fatty acids and ceramides are detected in the lipid profile. The ultra-structural features show secretion and normal arrangement of bi-layered lipid content into the intercellular spaces of the cornified cell layers (formation of normal permeability barrier).

![Keratin 10 detection](image)

![Filaggrin detection](image)
Reconstructed Human Epidermis

APPLICATIONS

- SKIN IRRITATION
  - *ECVAM Validation 2006 OECD TG 439
- SKIN CORROSION
  - *ECVAM Validation 2006 OECD TG 431
- PHOTOTOXICITY
- BACTERIAL ADHESION
  - Assessment of medical devices
  - Epidermal differentiation
  - Percutaneous absorption
  - Retinoid activity test
- DNA DAMAGE
- OMICS
- PERMEABILITY

REFERENCES

*In vitro* patch test using non-invasive endpoints.
De Brugerolle de Fraissinette A, Rosdy M, Tornier C, SOT 2011

L’Oréal commitment in the development, evaluation and validation of screening and testing approaches contributing to the 3Rs.

An Evaluation of the EpiSkinTM and SkinEthicTM RHE test methods for predicting dermal toxicity using OECD TG404.

Assessment of the skin irritation potential of chemicals by using the SkinEthic RHE model & the common skin irritation protocol evaluated in the ECVAM skin irritation validation study.

SHIPMENT

At Room Temperature
EpiSkin is an *in vitro* reconstructed human epidermis from normal human keratinocytes cultured on a collagen matrix at the air–liquid interface. This model is histologically similar to the *in vivo* human epidermis.

**HISTOLOGY**

Immunohistologicals, biochemicals (keratins and lipids analysis) as well as genomic assay have shown the presence of the main differentiation epidermal markers: keratin 1/10 and 5/14; loricrine, filaggrin, corneodesmosin, CLSP and capsase 14, as well as epidermal lipids, including ceramide 1 implicated in the barrier function of the skin.

**CHARACTERIZATION**

Immunohistologicals, biochemicals (keratins and lipids analysis) as well as genomic assay have shown the presence of the main differentiation epidermal markers: keratin 1/10 and 5/14; loricrine, filaggrin, corneodesmosin, CLSP and capsase 14, as well as epidermal lipids, including ceramide 1 implicated in the barrier function of the skin.
Reconstructed Human Epidermis

APPLICATIONS

- SKIN IRRITATION
  *ECVAM Validation 2006
  OECD TG 439
- SKIN CORROSION
  *ECVAM Validation 2006
  OECD TG 431
- PHOTOTOXICITY
- BACTERIAL ADHESION
- DNA DAMAGE
- OMICS
- PERMEABILITY

- Genotoxicity (micronucleus test & COMET assay) for topically applied compounds or formulations

REFERENCES


Evaluation of the in vitro EpiSkin and SkinEthic RHE Skin Irritation test methods for hazard identification of chemicals.


SHIPMENT

At Room Temperature
Human Corneal Epithelium

DESCRIPTION

Cultivated at the air–liquid interface in a chemically defined medium, the immortalized human corneal epithelial cells from the cell line HCE reconstruct a corneal epithelial tissue (mucosa), devoided of stratum corneum, ultra–structurally (tissue morphology and thickness) similar to the corneal mucosa of the human eye (presence of basal, wing and mucus production cells).

HISTOLOGY

DAYS OF CULTURE 5

SURFACE FORMATS

ORIGIN HCE cell line

CHARACTERIZATION

Ultra–structural features show the typical presence of a columnar basal cell layer, 2–3 layers of transitional wing cells, and 2–3 layers of superficial squamous cells.

The reconstructed human corneal epithelium secretes the same mucins that are being found in the human cornea in vivo and expresses CD 44 and keratin.
APPLICATIONS

- Ocular irritation assay (ongoing multi centric validation by ECVAM, supported by COSMETICS EUROPE)
- Ocular irritation assay (as a screening tool for products selection)
- Corneal permeability and metabolism
- Corneal differential display i.e. mucin production

REFERENCES

*In vitro* Assessment of Eye Tolerance using the SkinEthic HCE Test Method Applied to Ingredients Used in Cosmetic

*In vitro* assessment of eye irritancy using the Reconstructed Human Corneal Epithelial SkinEthic™ HCE model: Application to 435 substances from consumer products industry.

Occludin gene expression as an early *in vitro* sign for mild eye irritation assessment

Evaluation of the cytotoxic effects of ophthalmic solutions containing benzalkonium chloride on corneal epithelium using an organotypic 3-D model

SHIPMENT

At Room Temperature
Reconstructed Human Pigmented Epidermis

DESCRIPTION

Cultivated at the air-liquid interface in a chemically defined medium, normal human keratinocytes cultured in the presence of melanocytes of phototypes II, IV and VI, form a 3D human epidermal tissues. The different tanning degrees of these constructs correspond macroscopically to 3 different phototypes of human skin.

HISTOLOGY

DAYS OF CULTURE 10

SURFACE FORMATS

ORIGIN Male

CHARACTERIZATION

The RHPE model presents a histological morphology comparable to the in vivo human tissue, consisting in the presence of a multi-layered, stratified and pigmented epidermis. Melanocytes are localized in the basal cell layer interspersed with basal cell keratinocytes. Moreover, melanin is distributed in the basal layer melanocytes and in upper layer keratinocytes similarly to that seen in normal human skin, reflecting its transfer into surrounding proliferating keratinocytes.

RHPE model exhibits a homogeneous tanning demonstrating the functionality of the epidermal melanin unit in vitro and that the obtained phototype is determined by the melanocyte phototype, i.e. the rate of constitutive melanin synthesis.
APPLICATIONS

- The phototype VI model is generally used to evaluate the whitening potential of skin care formulations and phototypes II and IV models to assess the induction of pigmentation by UV exposure and/or by chemical modulators.

- In both pigmentation and depigmentation assays, repeated topical or systemic application result in a modulation of melanogenesis characterized by an increase or a decrease of melanin synthesis, respectively.

REFERENCES

Reconstructed Human Pigmented Epidermis (RHPE): an in vitro model for the evaluation of melanogenesis.

Sepicalm VG, a new skin lightening enable to modulate melanogenesis–related genes and to prevent UV–induced pigmentation thanks to its soothing properties

Melanocyte containing human organotypic epidermis as a model to evaluate toxicity of melanin binding substances.

Human pigmented epidermis reconstructed in chemically defined medium used for evaluation of modulation of pigmentation.

SHIPMENT

At Room Temperature
DESCRIPTION

Cultivated in vitro on a polycarbonate filter at the air liquid interface in a chemically defined medium, the normal human gingival epithelial cells form a gingival epithelial tissue, histologically similar to the outer cell layers of the human gum.

HISTOLOGY

The reconstructed human gingival epithelium shows a comparable profile of biomarkers than in the in vivo situation such as the expression of filaggrin in the ganular cell layers, involucrin, keratin 6, keratin 10, keratin 13 and keratin 16 in the supra basal cell layers in the basal cells. g

DAYS OF CULTURE 5 / 12

SURFACE FORMATS

0.5 cm²

ORIGIN Male/Female

CHARACTERIZATION
APPLICATIONS

- Skin Irritation
- Skin Corrosion
- Permeability
- Bacterial Adhesion
- Omics

REFERENCES


SHIPMENT

At Room Temperature
Human Oral Epithelium

DESCRIPTION

Cultivated in vitro on a polycarbonate filter at the air liquid interface in chemically defined medium, the transformed human keratinocytes of the cell line TR146 (from a squamous cell carcinoma of the buccal mucosa) form an epithelial tissue devoid of stratum corneum, resembling histologically to the mucosa of the oral cavity.

HISTOLOGY

DAYS OF CULTURE 5 / 12

SURFACE FORMATS

ORIGIN TR146 cell line

CHARACTERIZATION

The reconstructed oral epithelium expresses keratin 6 and keratin 16 and differentiation markers such as involucrin like in the in vivo situation.
APPLICATIONS

- Oral irritation assay (oral care products, dental materials)
- Oral anti-inflammatory assay (oral care products)
- In vitro candidosis research
- Drug delivery

REFERENCES


SHIPMENT

At Room Temperature
Human Vaginal Epithelium

DESCRIPTION

Cultivated in vitro on a polycarbonate filter at the air–liquid interface in a chemically defined medium, A431 cells (derived from a vulval epidermoid carcinoma) form a three-dimensional epithelial tissue human similar to the in vivo vaginal mucosa.

HISTOLOGY

DAYS OF CULTURE 5

SURFACE FORMATS

ORIGIN A431 cell line

CHARACTERIZATION

The reconstructed vaginal epithelium expresses keratin 6 and keratin 16 and differentiation markers such as involucrin, as the in vivo epithelium does.
APPLICATIONS

- Vaginal irritation assay of the safety profile of topically applied gynaecological compounds or products
- Integrated *in vitro* vaginal safety screening approach for bath & body wash products
- Bacterial or viral adhesion screening for antibiotics or antiviral compounds or products used for example in the treatment of vaginal candidosis

REFERENCES

Integrated *in vitro* vaginal safety approach for bath and body wash products utilizing SkinEthic Human Vaginal Epithelium (HVE) model

Quantitative expression of the Candida albicans secreted aspartyl proteinase gene family in human oral and vaginal candidiasis

Candida albicans–secreted aspartic proteinases (Sap) modify the epithelial cytokine response in an *in vitro* model of vaginal candidiasis.

The secreted aspartyl proteinases sap1 and sap2 cause tissue damage in an *in vitro* model using vaginal candidiasis using reconstituted human vaginal epithelium.

SHIPMENT

At Room Temperature