

Improved lanolin-based synthetic membrane skin model

CSIC has developed a lanolin-based synthetic membrane as percutaneous absorption model for transdermal delivery of actives studies. The system mimics mammalian skin models and may be used in screening tests to estimate the permeability of chemicals through human skin improving properties shown by current artificial membrane models.

Industrial partners from the cosmetic, the pharmaceutical industry or lab technologies manufacturers are being sought to collaborate through a patent licence agreement.

An offer for Patent Licensing

Lanolin from wool fibres to mimic human skin properties

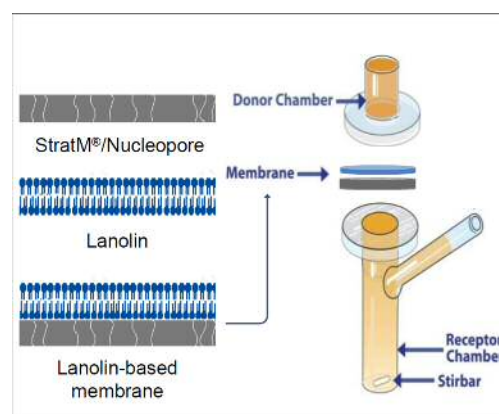
The assessment of percutaneous absorption of molecules is a key step in the evaluation of transdermal delivery of compounds.

A range of models have been developed to avoid *in vivo* human evaluation, for ethical and economic reasons, including *in vitro* human or animal skin models or artificial skin models. However, the *in vitro* skin models are expensive, sensitive to storage and show high lot-to-lot variability. Moreover, current polymeric artificial membrane skin models, even though their reproducibility, are only being used to study basic diffusion mechanisms because they are not always representative of human skin properties. Thus, alternative methods are needed to obtain reproducible and reliable data, which provide a meaningful prediction of the *in vivo* human situation.

The technology presented is based on the addition of lanolin to synthetic commercial membranes, such as Nucleopore® or Strat-M®.

The structure of lanolin used, extracted from wool fibres, mimics the lipidic matrix of the Stratum corneum by having a similar chemical composition and properties, and offers a suitable strategy to achieve accurate modelling of the skin barrier properties by combination with synthetic membranes.

This model could be used in evaluating skin absorption, testing of cosmetic products, and for the toxicological screening of topically or transdermal delivery of chemicals.



Franz cell with the lanolin-based membrane.

Main innovations and advantages

The lanolin-based membrane model:

- Increases the barrier function of the synthetic membranes by strong permeability reduction once lanolin is added (TEWL < 15 g/h m², similar to porcine skin levels).
- Mimics topical active's absorption in human skin, due to the lipid composition of the membrane obtained.
- Similar absorption to that of porcine skin, tested with different actives.
- Reliable, inexpensive alternative to human or animal skin, improving properties of current commercial synthetic membranes.

Patent Status

Spanish patent application filed

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