

IN VITRO EVALUATION OF COSMETIC FORMULATIONS AND MOISTURIZERS FOR SKIN HYDRATION USING EPIDERMFT™

Objective

To evaluate skin hydration following treatment with topically-applied cosmetic formulations or moisturizers by measuring the electrical impedance within the EpiDermFT in vitro human skin model.

Methods

EpiDermFT tissues (Figure 1) are equilibrated overnight under standard culture conditions (37°C, 5% CO₂) with EpiDermFT Assay Media (EFT-400-ASY) according to the EpiDermFT protocol. 18-24 hours later, tissue culture media is aspirated and replaced with fresh, pre-warmed media.

Under sterile conditions in a laminar flow hood, tissues are equilibrated, with the lids open, for 90 minutes at ambient temperature and relative humidity. Tissues are exposed topically to 10µl of each test formulation for 60 minutes. Following exposure, residual test formulation is removed from the skin surface using a sterile cotton swab.

Skin hydration is evaluated by measuring the electrical impedance of the tissue surface (DPM 9003 Nova Meter, Nova Technologies) at time 0 minutes, 15 minutes and 30 minutes post-exposure.

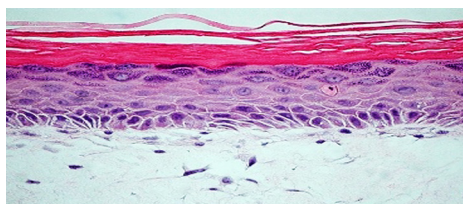


Figure 1. Histology of EpiDermFT. H&E stained cross-section showing that the tissue morphology of EpiDermFT closely parallels that of normal human skin. The epidermis contains basal, spinous, granular and stratum corneum layers, and the dermis contains viable fibroblasts (400X).

Results

Skin hydration levels were significantly higher in tissues treated with Moisturizer 1, Moisturizer 2 and Moisturizer 3 compared to untreated controls at each time point and compared to their baseline controls (Figure 2).

* Student's t-test ($P \leq 0.01$). Data is presented as experimental replicates (n=3).

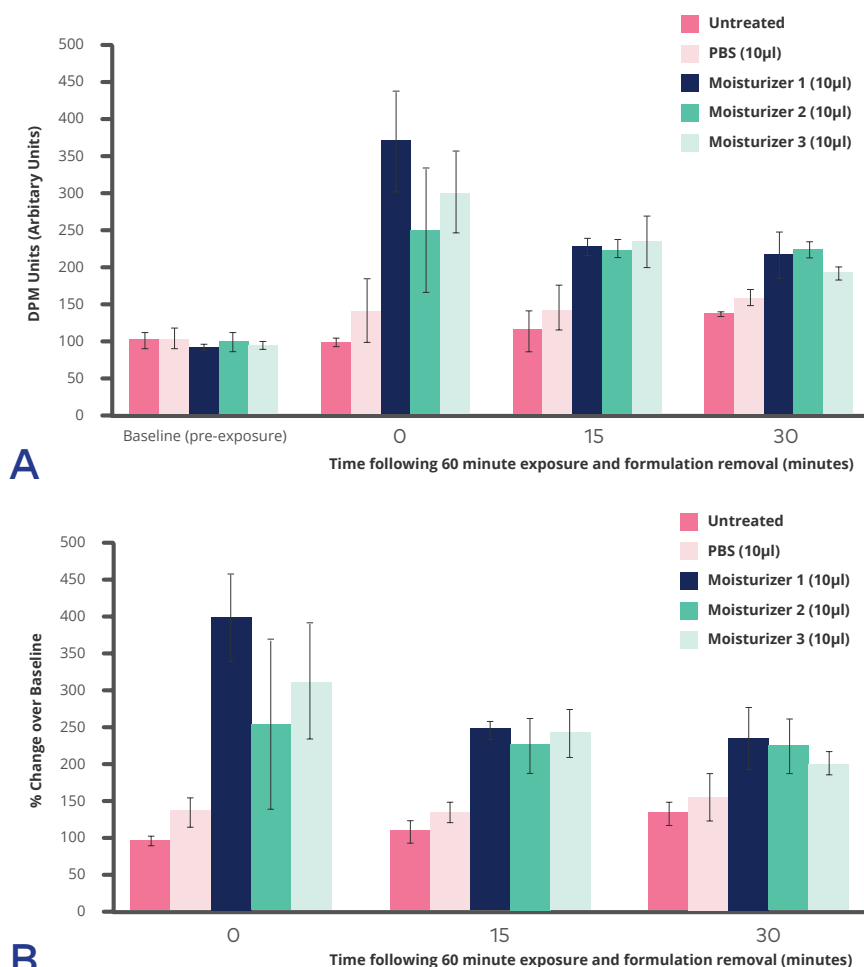


Figure 2. A comparison of EpiDermFT untreated or treated with respective formulation of moisturizer reveals an increase in hydration levels.

Conclusion

Assessment of skin hydration following treatment with topically applied formulations and moisturizers in the EpiDermFT in vitro human skin model can be used in product efficacy and claims substantiation studies.