

IN VITRO EVALUATION OF SUNSCREEN FORMULATIONS FOR UV PROTECTION USING EPIDERMFT™

Objectives

To evaluate sunscreen formulations by analyzing cyclopyrimidine dimer (CPD) formation following solar UV exposure using the EpiDermFT in vitro human skin model.

Methods

- EpiDermFT tissues (Figure 1) were produced in the MatTek Corporation GMP tissue production facility.
- Tissues were either treated topically with 25µl of SPF 30 formulation or left untreated.
- EpiDermFT tissues were then subjected to solar UV radiation.
- Following UV exposure, genomic DNA was isolated from treated EpiDermFT tissues.
- DNA samples were quantitated for CPD formation.

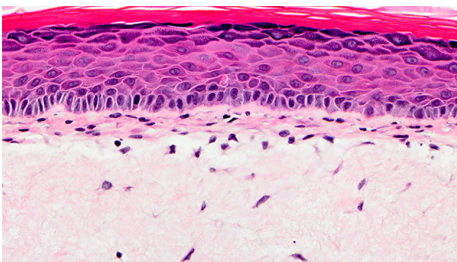


Figure 1 Histology of EpiDermFT H&E stained cross-section showing that the tissue morphology of EpiDermFT closely parallels that of normal human skin. The epidermis contains basal, spinous, granular and stratum corneum layers and the dermis contains viable fibroblasts (400x).

Results

CPD levels were significantly elevated in EpiDermFT tissues exposed to solar UV radiation (either 150 mJ/cm² or 200 mJ/cm² UVB) compared to sham-irradiated controls. Treatment with an SPF 30 formulation significantly reduced CPD formation in UV-irradiated tissues (Figure 2).

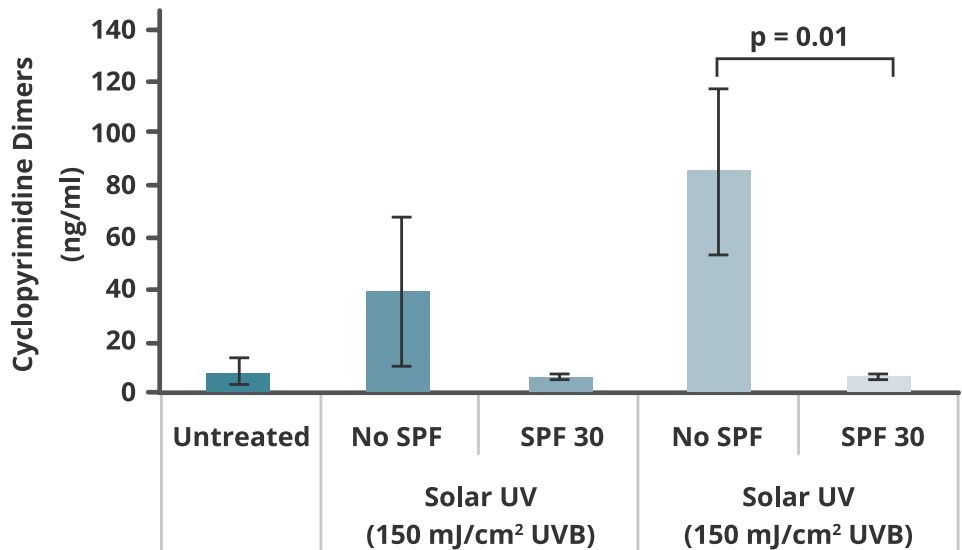


Figure 2. SPF 30 formulation prevents solar UV-induced CPD formation in EpiDermFT.

Conclusion

Quantitation of cyclopyrimidine dimers, following solar UV irradiation of the in vitro human skin model, EpiDermFT, can be used for the evaluation of sunscreen formulations for UV protection.