

C&E Hand Renewal

Active delivery into deep epidermal and dermal layers

Introduction

Like our face, our hands are under constant external attack from aggressors like ultraviolet radiation, ozone, and urban pollution. Antioxidants like vitamin C and vitamin E can mitigate the long-term damage caused by these factors, resulting in healthier skin as we age. PCA SKIN®'s **C&E Hand Renewal** combines high levels of vitamin C (10%) and vitamin E (5%) in the same proprietary anhydrous base used in PCA SKIN®'s **C&E Advanced**, which is scientifically proven to maintain product stability over time and deliver more active ingredients deeper into the skin. The intradermal delivery of L-ascorbic acid (vitamin C) and tocopherol (vitamin E) was quantitatively determined from **C&E Hand Renewal**. Franz cell diffusion experiments revealed that both actives penetrate deep into the skin over 24 hours.

Objective

To measure the dermal penetration of vitamin C and vitamin E from **C&E Hand Renewal**.

Methods

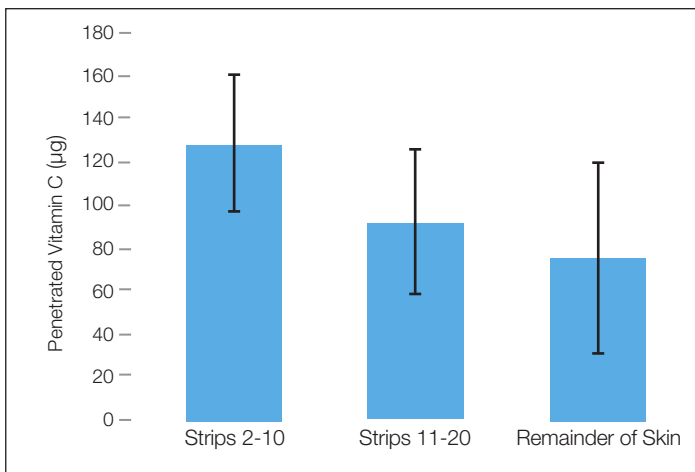
Diffusion experiments were conducted on a six-cell "dry heat" Franz diffusion unit. Product was applied onto porcine ear skin and rubbed on for 30 seconds to ensure even coverage. The pieces of skin were then placed on the Franz cell for a 24-hour diffusion study. Active delivery was analyzed via two separate procedures, depending on the active. Vitamin C: excess product was rinsed off the skin, then the stratum corneum was removed by tape stripping off the first 20 layers. The tape stripped layers and the remainder of the skin, consisting of the "viable epidermis" and dermis, were homogenized to extract all penetrated active. Vitamin E: excess product was rinsed off the skin surface, then any further surface residue was removed by tape stripping off the first three layers of skin. With the remainder of the skin, the epidermis and

dermis were separated and each layer was homogenized to extract all penetrated active. For both actives, quantification was determined using an Agilent high-performance liquid chromatography (HPLC) with a UV-vis detector.

Results

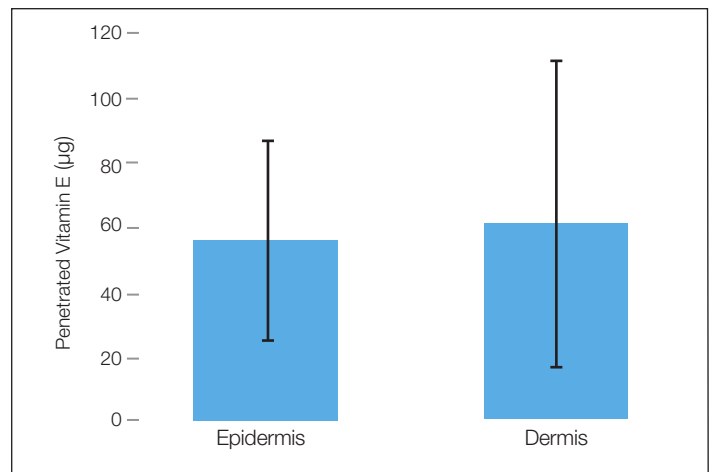
Both vitamin C and vitamin E can penetrate beyond the outer stratum corneum and into the deeper layers of the skin from **C&E Hand Renewal** (Graph 1 and Graph 2). Such deep active penetration of both vitamin C and vitamin E suggests that **C&E Hand Renewal** can be beneficial in protecting the skin from external aggressors and maintaining the long-term integrity of the skin's extracellular matrix.

Graph 1: Penetrated Vitamin C



N=6 of porcine skin (tape strip one omitted)

Graph 2: Penetrated Vitamin E



N=6 of porcine skin