**Stability and Rat Skin Permeation of Vitamin E and Vitamin E Acetate in Cosmetic Preparations**

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**ABSTRACT**

Tocopherol (T) and tocopherol acetate (TA) are widely used ingredients in cosmetics. The present study was carried out to evaluate the stability and transdermal permeation of T and TA contained in marketed cosmetic products. The content and stability under different temperatures of T/TA in four marketed products (*A-D*) and two experimental formulations (*F1*and *F2*) were investigated by HPLC. *In vitro* permeation study was performed across neonatal skin stratum corneum (SC) using diffusion cells. *In vivo* permeation was studied in neonatal rats after repeated application of the products and analysis of T/TA in the SC/deeper layers. The results indicated variable degree of stability according to the storage temperature and product type. The stability progressively decreased upon storage at 37 °C > 25 °C > 2-8 °C. TA containing formulation showed higher stability compared to T. No vitamin permeation was detected through SC as *in vitro* biological barrier after 4 hours. *In vivo* permeation indicated no detectable T/TA in SC and variable degree of drug penetration, 4.3- 12.6% of the applied dose, depending on the formulation. *In vivo* application of TA containing preparations did not result in any transformation of the TA into T under the investigated experimental conditions. Further studies are required to optimize such formulations for improving vitamin E stability and transdermal permeation and eventually achieve the expected therapeutic and cosmetic outcome.