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TITLE

STABILITY AND RAT SKIN PERMEATION OF VITAMIN E AND VITAMIN E ACETATE IN COSMETIC PREPARATIONS

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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 (F1and 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.