Liposomes as a Stabilizing Carrier System for Vitamins

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Abstract

The benefits of vitamins in the cosmetics and dermatology are well known since years but getting a stable formulation is quite dependent on the derivatives used.

The encapsulation of vitamins into liposomes offers the formulator significant advantages in terms of stability of the vitamins, enhancing their properties as well as penetration of the actives into the epidermis.

Vitamin A:

Vitamin A promotes the enzyme activity of the skin and increases its collagen content, and is thus able to regenerate skin which has aged prematurely as a result of exposure to UV radiation. To a certain extent, vitamin A improves the skin's softness and smoothness, and brings about a significant increase in its elasticity. Latest findings show that vitamin A and its metabolites contribute to certain genes being expressed to a greater or smaller degree, and that processes responsible for the development of cancer are prevented (Prof. Dr. G. Jahreis, University of Jena).

Vitamins E and C:

Lipophilic vitamin E and water-soluble vitamin C represent an effective combination to act as antioxidants, free radical scavengers and peroxide neutralisers, in this way helping to prevent skin ageing as a result of UV radiation.

Vitamin E can help to reduce the formation of UV radiation-induced erythema, and if added to cosmetic formulations can increase the light protection factor [G. Erlemann and R. Merkle; SÖFW Journal 117 (10), 379-384, 1991].

Dermatologists recommend the use of vitamin E for the following: the inhibition of inflammatory processes, relief of itchiness, improvement of wound healing and scarring, as well as to support the treatment of acne [H. Möller et al.; Fett-Wissenschaft, Technologie 8, 295-315, 1989].

1. Penetration of ROVISOME ACE

The ability of the vitamins to permeate the human skin (200 μm thick viable skin) was determined by Nimbus GmbH, Leipzig, with

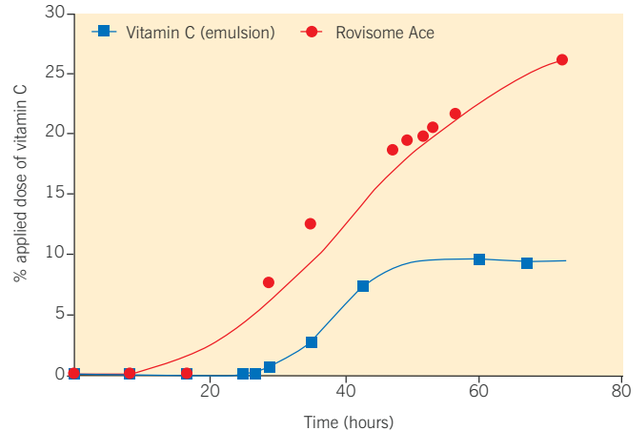

Figure 2. Penetration of Vitamin C (MAP) through the skin

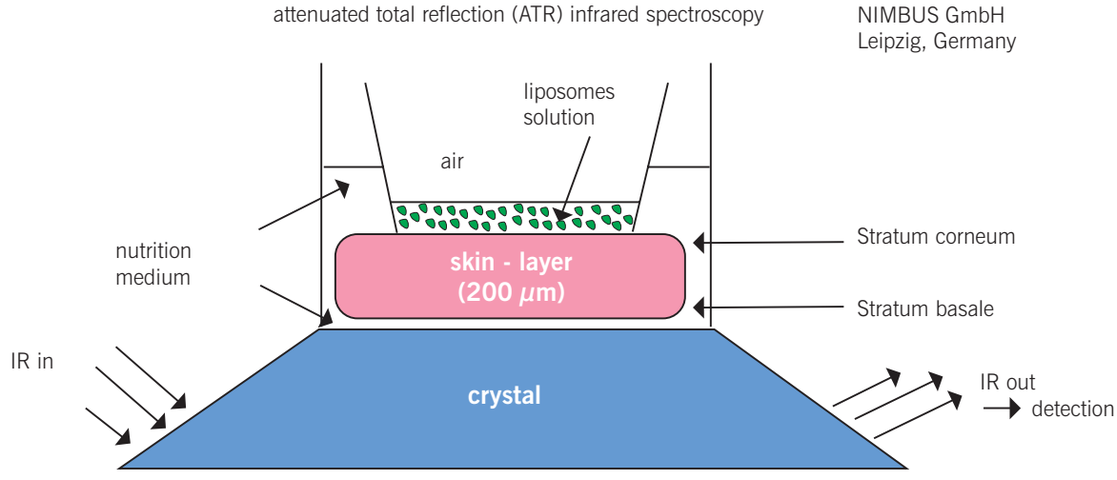

Figure 1. Set up of the penetration test via ATR