

〈シンポジウム〉

ナノテクノロジーの化粧品、医薬品への応用：化粧品分野への応用

無機塩を用いた経皮吸収のための新規ナノテクノロジー

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New Nanotechnology Using Inorganic Salt for Transdermal DDS

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Abstract

We show an advanced nanotechnology for trans-dermal drug delivery system (DDS). In this time, we introduce the technology into all-trans retinoic acid (atRA) for improved all-trans retinoic acid (atRA) therapy for photo-damaged skin. We prepared inorganic-coated atRA nanoparticles, we call it NANOEGGTM because of egg like structure in nano-scale, using boundary-organized reaction droplets. Both irritative symptoms and physicochemical instability of the atRA were improved. NANOEGGTM resulted in showing the remarkable pharmacological effects, compared with atRA as such as follows; 1) thicker epidermis than atRA as such treatment, and 2) the enhanced expression of mRNA for heparin-binding epidermal growth factor (HB-EGF). Furthermore, we found the production of hyaluronan (HA) among the intercellular spaces of the basal and spinous cell layers in epidermis. NANOEGGTM could not only efficiently regulate keratinocyte cell proliferation and differentiation, but also markedly produce the additional benefit.

In clinical trials by volunteers, NANOEGGTM showed superior effects for making less wrinkled and/or less pigmented skin face.

The NANOEGGTM technology would also have a big potential for trans-dermal DDS for other compounds

Key words: atRA, nanoegg, HB-EGF, transdermal, DDS.