Abstracts

Journal of the Society of Cosmetic Chemists Japan Vol. 43, No. 1, 2009*

An Approach to Improvement of Pore Conspicuousness Caused by Epidermal Structure on Cheek *

Takafumi Nishijima

Kao Corporation, Global R&D—Beauty Creation * *
 * * 2-1-3, Bunka, Sumida-ku, Tokyo 131-8501, Japan

Conspicuous facial pores are one of the more serious aesthetic defects of concern to most women. However, the mechanism that causes the conspicuousness of facial pores remains unclear. We observed the epidermal structure around the conspicuous pores on cheeks in vivo using a confocal microscope in detail, and found that there were peculiar epidermal structures around the conspicuous facial pores. These epidermal structures were characterized by a thick epidermis, which reached the deep dermis, and elongated dermal papillae. As the shape and the size of these epidermal structures at more than one hundred micrometers below the surface were similar to those of the surface hollow area around the conspicuous pores, we thought that this epidermal structure was one cause for facial pore conspicuousness on cheeks. To improve these epidermal structures through contraction of keratinocytes, we developed 1-isostearylglycerol-3-phosphate, which promoted the gel contractile ability of keratinocytes and suppressed the keratinocytes' growth in vitro. The treatment of lotion containing 1-isostearylglycerol-3- phosphate could alter the epidermal structures and decrease the hollow area around the conspicuous facial pores.

Sodium dl-a-Tocopheryl Phosphate Inhibits Ultraviolet-Induced Production of Reactive Nitrogen Species in Human Keratinocytes *

Mitsuo Nakama, Hiroshi Tanaka, Izumi Ishii, Satoru Nakata

Research Laboratories, Nippon Menard Cosmetic Co., Ltd. * *   * * 2-7, Torimi-cho, Nishi-ku, Nagoya 451-0071, Japan

It has been well established that UV irradiation causes various kinds of photodamage in human skin. Skin photodamage is mainly caused by reactive oxygen species (ROS), such as superoxide, hydroxyl radical, hydrogen peroxide, and singlet oxygen. Recently, it has been revealed that reactive nitrogen species (RNS), such as nitric oxide (NO) and peroxynitrite (ONOO⁻), are also an important consideration in UV-irradiated human skin. RNS cause several types of skin damage, for example erythema, darkening, disruption of epidermal barrier function, and psoriasis. Therefore, it is very important to control RNS production for beautiful skin to be maintained. However, RNS are indirectly measured by stable degradation products because their life is very short. In this present study, we attempted the direct observation of RNS production in human keratinocytes. As a result, we succeeded in direct measurement of real-time UVB-induced RNS production in human keratinocytes by using a RNS-specific fluorescence probe. On the other hand, sodium dl-a-tocopheryl phosphate (VEP), a newly synthesized water-soluble vitamin E derivative, inhibited UVB-induced RNS production in human keratinocytes.

---

* These abstracts appear as they were originally published. They have not been edited by the *Journal of Cosmetic Science.*

Furthermore, we revealed that UVB-induced neuronal nitric oxide synthase (nNOS) mediates RNS production in human keratinocytes. These results suggest that VEP is a useful ingredient for cosmetic products, and that VEP may protect the skin from several kinds of damage caused by UV-induced RNS production.

A Novel Non-Invasive Method for Assessing Interior Skin Damage Caused by Aging and Photoaging *

Marie Kawabata (Kishi) * *, Junko Tsuchiya * *, Yumika Yamakawa * *, Yuta Miyamae * *, Yukihiro Ozaki * * * POLA Chemical Industries, Inc. * * Kwansei-Gakuin University * * * * * 27-1, Takashimadai, Kanagawa-ku, Yokohama 221-0833, Japan * * * 2-1, Gakuen, Sanda, 669-1337, Japan

The phenomenon of aging can broadly be categorized into photoaging caused by exogenous factors and physiological aging that is caused by endogenous factors. Our goal was to develop a non-invasive way to assess changes taking place inside the skin for each type of aging, photoaging and physiological aging, by using near-infrared diffuse reflectance (NIR-DR) spectroscopy. For the photoaging and physiological aging effects, the outer forearm (sun-exposed) and the inner upper arm (sun-protected) skin areas were studied in eighty-six females from twenty-three to sixty-nine years of age. Measurements were made using NIR-DR and subjected to Principal Component Analysis (PCA) ; the results suggested the possibility of distinguishing and quantifying both types of aging taking place inside the skin by using the 1670–1820 nm and 2000–2230 nm regions of NIR-DR spectra. In photoaging, structural changes in proteins occur which are reflected in the NIR-DR spectra in the form of a peak shift near 2050 nm that is due to a combination of amide A and amideII. On the other hand, physiological aging is associated with a change in collagen quantity as is reflected in the portion of the NIR-DR spectra assigned to protein. Using NIR-DR and PCA, we discovered the possibility of using a non-invasive method for assessing the degree of photoaging and physiological aging as degeneration and degradation.

An Analysis of Semantic Structure of KAITEKI-KAN and Development of Its Measuring Method Using Emotional Words *

Rie Monchi-Semba, Atsushi Katayama, Satoshi Hikichi Perfumery Development Research Laboratory, Kao Corporation * * * * 2-1-3, Bunka, Sumida-ku, Tokyo 131-8501, Japan

We conducted three Internet studies in order to develop a psychological conceptual model of KAITEKI-KAN which is comfortable and pleasant feelings in daily life. First, we collected emotional words that express positive feelings from literature and dictionaries. Then, we asked respondents (n = 239) to imagine a familiar comfortable scene and to rate their feelings on the scales of emotional words (study 1). Factor analyses revealed that KAITEKI-KAN is constructed from 14 factors, for example, satisfaction, calmness, refreshment, and so on. Because imaginary scenes that were reported by respondents of study 1 were limited to a few variations, we carried out study 2 which requested respondents (n = 1047) to imagine a wide variety of comfortable scenes. The results added 2 factors to the 14 factor model. Finally, we confirmed the reliability of the 16 factor model by study 3, which requested a part of respondents of study 2 (n = 409) to answer the same questions 3 months after study 2. From these studies, we concluded the 16 factor model was reliable and usable for understanding and measuring KAITEKI-KAN. In addition, multidimensional scaling showed that the 16 factors could be depicted on a semantic space which was constructed in three dimensions. We understood the three dimensions as the"activation–deactivation"dimension,the"physical–cognitive" dimension, and the"challenge–acceptance"dimension. Applying our 16 factor model of KAITEKI-KAN, we developed a quantitative measurement method for KAITEKI-KAN. We concluded that researchers would be able to understand details of consumers feeling when consumers rate commodities by using our method.