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Abstracts

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Developing Beauty-Enhancing Makeup by Controlling Light Reflected from Skin (I) ---A Makeup Foundation Incorporating an Optical Effect of Red Light---

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Lighting can change the appearance of the skin in a major way. Taking notice of the fact that illumination with enhanced red content is often used to make skin look more attractive, we evaluated the effect of long wavelength light on the appearance of the skin. We developed a light source that could emit light in any combination of wavelengths, and used a variety of lights against the skin to conduct a visual evaluation. As a result, we found that skin that was illuminated with light containing a large percentage of long wavelength light of at least 600nm appeared even in tone, with skin faults such as spots and fine wrinkles rendered less visible. Next, we evaluated the light reflected from the skin. As a result of an evaluation of spectral reflectance and skin appearance, we found that as little as a 10% increase in the reflectance of long wavelength light contributed to the enhancement of an even appearance of the skin. We therefore considered methods for incorporating this "flattering effect" to make the skin appear better than it actually is into the development of cosmetic products. We engaged in the development of powdered material that would generate the same kind of reflectance as would be generated by illumination with red light. As a result, we came to develop a red powdered fiber with a #-shaped cross-section. This material, with its unique cross section, demonstrated an effect of enhancing only the reflectance of long wavelength light, without lowering lightness or chroma. We verified that when this powder was formulated into a sample foundation and applied to the skin, the skin appeared more even in tone and looked more attractive compared to skin to which conventional foundation was applied.

Developing Beauty-Enhancing Makeup by Controlling Light Reflected from Skin (II) ---A Makeup Foundation Producing an Optimal Reflectance Dip on Skin---

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Spectral reflection curves of human skin generally show a characteristic dip in the 500 to 600 nm range. This "dip" is unique for each person, and is believed to be caused by the spectral absorption of blood. We investigated the spectral reflectance of human skin and discovered a very interesting correlation between the area of the reflectance dip and L* value (lightness of the skin). The Standard Area of Reflectance Dip (Ads) is defined and calculated from the correlation we discovered. The Actual Area of Reflectance Dip (ADa) is calculated from the spectral reflection curve. The ratio of ADa and ADs was found to be a very useful

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optical parameter for skin complexion perception. By artificially creating different optical environments and varying ADa/ADs from 10% to 200%, we found that skin appeared more beautiful when ADa/ADs was in the 100-125% range. We therefore considered methods for applying these results into the development of cosmetic products. Investigation and testing of many different pigments resulted in the development of specially-designed powdered fiber with a #-shaped cross section dyed magenta. An experimental foundation with this powdered fiber produced a clear reflectance dip by raising reflectance in the short and long wavelength ranges. ADa/ADs increased from 49% to 107% without reducing lightness when this makeup foundation was applied on sallow skin.

Evaluation of a Novel Hybrid Polymer in Hair Treatment

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Hydrolyzed proteins and silicones have been widely used and played an important role in hair treatment. Effects on hair, of a newly developed hybrid polymer consisting of hydrolyzed protein, alkyl chain and silicone was investigated. It was clear that the polymer was effective in preventing dyed hair from discoloring and in improving the moisture feel of hair. It was confirmed that the polymer had good substantivity contributing to hair luster, manageability, moisture feel, smoothness and good combability. The above effects were remarkably displayed especially on damaged hair. Furthermore, a sensory test in practical use of shampoo even with the polymer highly diluted supported the above results.

Stabilization and Application of Liposomal Structures Containing Sphingomyelin

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Cosmetic products with high affinity to the skin have been recently studied, applying liposome and nano-sized capsules formed by amphiphiles such as lecithin and other lipids to them. Sphingolipid, based on the sphingosine framework among the said lipids, is one of new bio-lipids which have begun to be studied in terms of physicochemical/biological properties and applicabilities. Sphingomyelin is known as a representative sphingophospholipid. In this study, we tried to use this sphingomyelin as a cosmetic ingredient, particularly for a liposomal formula consisting of the sphingomyelin As a result, it was found that its barrier (occlusive) ability against water evaporation was superior to that of lecithin as a representative glycerophospholipid, due to a higher rigidity in the bilayer membrane of the liposome. Therefore, it is expected that sphingomyelin will show a complementary effect for damaged intercellular lipid structures of the stratum corneum when it is applied to skin care products. In addition, it was demonstrated that a skin care product with sphingomyelin had a high moisturizing/emollient ability and an improvement effect on existing wrinkles.

Trend on Alternative to Animal Testing

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For the promotion of 3R's (Reduction, Refinement, Replacement) principles of animal tests, the EU and US established the European Center for the Validation of Alternative Methods (ECVAM) and the Interagency Coordinating Committee on the Validation of Alternative Methods (ICCVAM), respectively. The purpose of these centers is to detect reliability and relevance of alternative methods, which should be determined by intra- and inter-laboratory validation and peer review for their regulatory acceptance. A similar institute was established in Japan, the Japanese Center for the Validation of Alternative Methods (JaCVAM) in the National Institute of Health Sciences (NIHS). However, there are not enough resources in Japan. It is necessary to cooperate with a Japanese science society like the Japanese Society of Alternatives to Animal Experiments (JSAAE) and a Japanese industry group like the Japanese Cosmetic Industry Association (JCIA). We are expecting JaCVAM to contribute to the validation and peer review of new alternative methods with supporters and international cooperation for the evaluation of the safety of cosmetic ingredients and products.

Genkwanin Up-Regulates the Transcriptional Activation of Human Type VII Collagen Gene Promoter

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In a recent study, stimulating the formation of anchoring fibrils at the basement membrane zone in skin contributed to preventing skin ageing, such as wrinkle formation. Expression of the type VII collagen gene induces the formation of anchoring fibrils composed mainly of collagen type VII. We therefore transiently transfected a keratinocyte cell line with the plasmids containing type VII collagen gene promoter located upstream of the luciferase gene. We investigated the promoter activity under the presence of flavonoids and we found that Genkwanin up-regulates the transcriptional activation of human type VII collagen gene promoter.