

Abstracts

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An Application Study of Culture Supernatant of a Filamentous Fungus Isolated from Marine Environment as an Ingredient for Whitening Cosmetics

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The whitening effect of a culture supernatant from a fungus of *Trichoderma* sp. isolated from a marine environment was investigated. The supernatant had tyrosinase inhibitory activity in vitro. From the time course study of the production of tyrosinase inhibitor, maximum production was obtained after incubation for 3 to 4 days. The culture supernatant was subjected to a high performance liquid chromatography in order to investigate the whitening compounds in it. At least three compounds were found in the supernatant having inhibitory activity in vitro. The evaluation by a B16 cell in all fractions revealed that three active fractions existed. These fractions did not always coincide with the fraction of inhibitory activity in vitro. The fraction with inhibitory activity both in vitro and against B16 cell showed the remarkable inhibitory effect of melanogenesis. Thus, the culture supernatant contained various components having whitening effects, suggesting that it is possible to apply it to new whitening cosmetics.

Construction of a Three-Dimensional Human Skin Model Consisting of Keratinocytes, Dendritic Cells and Fibroblasts and Application of This Model for Alternative Animal Testing of Immune-Sensitizing Compounds

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In order to establish in vitro evaluation of the sensitization of human skin, we attempted to make a three-dimensional human skin model consisting of three different cells, dendritic cells, keratinocytes and fibroblasts. The viability of the cells in the human skin model was observed after staining with hematoxylin and eosin. After 11-14-day incubation (horny layer was initially observed), the three-dimensional human skin model was used for experiments. Due to 2,4-dinitrochlorobenzene (DNCB) under a non-cytotoxic dose, the keratinocytes and dendritic cells in the human skin model significantly induced IL-4 release into the incubating medium and dendritic cells induced CD86 expression. On the other hand, with sodium dodecyl sulfate (SDS; non-sensitizer), the keratinocytes and dendritic cells did not significantly induce IL-4 release and the dendritic cells did not induce CD86 expression. The results suggested that this three-dimensional human skin model with dendritic cells could be applied as an alternative to animal testing of immune-sensitizing compounds.

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Survey Research on Enlarged Pores as a Function of Age

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We conducted a research survey regarding the occurrence of prominent pores with respect to age by measuring pores on the faces of 248 Japanese women. Enlarged, prominent facial pores of women in their 20's and 30's showed they were full of follicular casts. A large proportion of these follicular casts were filled with protein. However, as the women aged, their pores were gradually replaced by pores that were not full of follicular casts. The size of facial pores showed a two-staged pattern of increase with age. Furthermore, the relationship between the size of the facial pore and the amount of sebum secretion gradually decreased with age. We speculate that facial pores become highly prominent when women are young because they become filled with follicular casts, and that these pores may remain visible, even when not filled with follicular casts, as women age. Different types of care are needed for different types of facial pores that occur with age.

Novel Multi-Functional Hybrid Polymer

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Although W/O emulsions are widely used especially for rich cream formulas, there are some oils such as silicones difficult to incorporate into the system by conventional

emulsifiers. Here, we have applied a novel hybrid polymer bearing hydrolyzed silk protein as the hydrophilic group, and both alkyl and silicone moieties as the hydrophobic group for the W/O emulsification of silicone oil. The hybrid polymer gave W/O emulsion with silicone oils or polar-oils relatively easily with long-term stability. W/O sunscreen lotion prepared with the hybrid polymer exhibited supple moisturizing effect while suppressing tackiness (stickiness) and excess oily feeling by sensory evaluation. The skin moisturizing effect was confirmed by in vitro and in vivo test.

For Our Continued Youth and Health: Science and Technology for Enhanced Skin Penetration of Cosmetic Ingredients to Obtain the High Effects of Cosmetics

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Cosmetics and their primary ingredients can be categorized according to their purposes. Some of them must be penetrated into the stratum corneum or be absorbed into the viable epidermis and dermis, and the others may just cover the skin surface to obtain their cosmetic effects. In addition, some cosmetics must be concentrated into the hair or hair follicles, not into the general skin surface. Thus, we must pay attention to the adequate properties of skin penetration/permeation of cosmetic ingredients for their purpose as cosmetics. I review skin penetration and permeation properties of cosmetic ingredients, experimental and evaluation methods of the skin permeation of materials, and regulation and enhancement methods for the skin penetration, distribution and permeation of cosmetic ingredients in a question and answer system.