

〈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

ナノテクノロジーを活用した高耐水性サンスクリーン剤の開発

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Development of Water Resistant Sunscreening Agent using Nano-technology

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Abstract

Sunscreening agents are widely used to avoid sunburn, photoageing and skin cancer, and to minimize various photosensitivities and phototoxicities. The development of substantive products has been provoked interest by researchers due to the demand of more effective ones. One of the major problems in the area of sunscreen research in recent years has been the development of substantive products that resist washing off by immersion in water.

To solve the problem, we were interested in the surface structure of lotus leaf that covered with minute hair massing and sheds water so well. And we tried to investigate a novel sunscreening agent with periodic and minute uneven structure. Formation of above structure was explained with the theory of dissipative structure proposed by Professor Ilya Prigogine. For the purpose of spontaneous formation this structure, it was necessary to contain particular nano-particle pigment and high volatile solvent. It was considered that diffusion property of the pigment and contraction ability of the solvents might play important role in the formation process of this typical structure. To confirm our hypothesis, the water-resistant and UV-protection properties of newly-developed sunscreening agent compared with those of conventional one. The results showed that both properties of the new one were remarkably improvement than the other.

In conclusion, we achieved success to develop novel sunscreening agent with high water-resistant property in order to form typical periodic and minute uneven structure on the skin.

Key words: sunscreening agent, water resistant, lotus leaf, uneven structure, dissipative structure.