〈シンポジウム〉
(皮膚計測工学)

香粧品科学領域における難題への挑戦
——くすみ解明に向けた血流的アプローチ——

矢田 幸博*

Challenge to Difficult Problems in Cosmetic Science
—Haematological Approach for Dullness Elucidation—

Yukihiro YADA*

Abstract

The corneal state, melanin pigmentation, blood flow, and morphological changes in the skin surface are considered to be involved in the development of "dullness." However, quantification of the degree of "dullness" or analysis of its causes have not adequately been performed. To clarify the status of "dullness" and find its improvement methods, we evaluated or measured more than 20 items including: 1) awareness of skin "dullness," 2) properties of the skin surface (texture, state of pores in the skin, degree of desquamation), 3) moisture content, subcutaneous moisture evaporation, mechanical properties such as viscosity and elasticity, 4) skin color, 5) blood flow (including oxygenated or reduced hemoglobin content), and 6) melanin content. The obtained results suggested that "dullness" is caused by blood flow in 67%, by melanin in 55%, and by both factors (mixed type) in 34%. In addition, 10% each was due to the corneal state such as desquamation and the morphology of the skin surface such as pores and texture. Therefore, improvement of blood flow is important in improving skin "dullness." "Dullness" may be improved by improving blood flow by methods such as physical stimulation represented by massage or pharmacological stimulation such as drugs that enhance blood flow. We evaluated improvement in skin "dullness" after massage performed once a week for 1 year or application of a drug that enhances blood flow daily for 6 months. Effects far marked than we expected were obtained by each method, and the importance of improvement in blood flow by enhancing blood flow was remarked. As mentioned above, quantitative and qualitative changes in the skin blood flow are observed as long-term physiological phenomena such as its decrease with age. Changes in blood flow are also induced by stimuli in daily life such as changes in the temperature and bathing or fatigue and mental stress. Such changes in the skin blood flow reflect its association with systemic physiological phenomena mediated by the central nervous system. However, the detailed association between skin blood flow and the central nervous system and the effects of these changes on skin function or metabolism remain unclear. Assuming that one of the causes of skin "dullness" is changes in skin blood flow, it is necessary to analyze the phenomenon that "dullness" improves after increasing redness by a drug. In addition, a new care method should be proposed based on results of analysis of skin metabolism and physiology.

Key words: dullness, blood flow, melanin.