

〈シンポジウム〉

(Evidence にもとづく化粧品を求めて—化粧品によってストレスをどこまで制御できるか?)

ストレスによるセラミド減少とその対処

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A Decrease in Ceramide Level by Psychological Stress and Treatments

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Abstract

To explore the influence of psychological stress on skin function, the influence of overcrowding stress on barrier function and water holding property in BALB/c and NC/Nga mice was examined. Transepidermal water loss was significantly increased in the mice that were maintained under high population density environment for 1 week, compared with the control. Skin surface conductance was significantly decreased in the stressed mice. These suggest that barrier function and water holding property were attenuated by mental stress. To estimate the mechanism of attenuation of these functions, amount of pyrrolidone carboxylic acid and ceramide in stratum corneum was evaluated. The amount of pyrrolidone carboxylic acid was declined in stressed BALB/c and NC/Nga mice. Ceramide level was significantly decreased in stressed BALB/c mice. In NC/Nga mice, however, a downward tendency in ceramide level was observed. Moreover activity of ceramidase was enhanced in stressed BALB/c mice, compared to the control. These suggest that decrease in ceramide level caused by mental stress-induced enhancement of ceramidase activity leads to attenuation of skin barrier function. We postulated that ceramidase inhibitor could have potency to restore the disruption of skin barrier function induced by mental stress. While examining kinds of plant extract, activity of ceramidase which was purified from mouse brain was suppressed by turmeric, saxifrage, centella and seaweed extracts. Further, *in vivo* test, these plant extracts restored ceramide level and skin barrier function in 10 days-stressed BALB/c mice. Taken together, turmeric, saxifrage, centella and seaweed extracts could be products against stress-induced skin trouble in the stressful and complicated modern society.

Key words: mental stress, barrier function, ceramide.