

Maintenance of skin homeostasis via regulating sweating

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Abnormal sweating has been thought to contribute to pathogenesis of various dermatoses in diverse ways. Exploration of novel sweating-regulating factors may provide a clue to formulate treatment strategies for these patients. Previously, we reported that decreased sweating contributed to pathogenesis of atopic dermatitis. If we could determine the factor influencing sweating in atopic dermatitis, it might be applied to treatment for patients with abnormal sweating. Thus, we explored the factors influence sweating in atopic dermatitis. Firstly, we focused on histamine, which is known as to play wide range roles in allergic dermatoses. The impact of histamine to acetylcholine-induced sweating response was measured with counting the number of active sweat gland by starch-iodin reaction, dynamic optical coherence tomography, visualizing sweat by two-photon excitation fluorescence microscopy, and quantitative sudomotor axon reflex test. Histamine demonstrably inhibited the acetylcholine-induced sweating in both murine and human via H1 receptor-mediated signaling. These results might provide basis for understanding pathogenesis and formulating novel therapeutic approach for dermatoses with dysregulated homeostasis.