

〈講 演〉

第 35 回日本香粧品学会 (2010) ・特別講演 II

リンパ循環学から見た皮膚の美しさと健康

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Skin Health Care from Points of View in Lymphology

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Abstract

Lymph formation and propulsion are determined by the interplay of multiple factors, both passive and active, that control how lymphatic vessels behave as pumps and/or conduits. Passive factors influencing lymph propulsion include hydrostatic pressure gradients across and along lymphatic vessels, tissue compression, respiratory movements, and gravitational forces. Active lymph propulsion is achieved by the spontaneous, rhythmic contractions of collecting lymphatic vessels, which serve as an essential pump mechanism to propel lymph up hill against a hydrostatic pressure gradient from peripheral lymphatics through lymph nodes into the thoracic duct. The lymphatic pump exhibits cardiac-like behavior in several respects such that pump performance can be analyzed using cardiac indicators. Other aspects of lymphatic vessel behavior resemble those of blood vessels. Like arterioles, lymphatics have a certain degree of basal tone, and respond to imposed, intraluminal flow gradients. The lymphatic system is also concerned with the immune system. Lymph nodes are the organs where innate immune responses lead to acquired immunity, where some of our most devastating pathogens evade immunity, and where auto-reactive lymphocyte first encounter tissue-specific self-antigens and are either tolerated or activated.

Key words: lymph formation, spontaneous contraction, lymph edema, albumin, microcirculation.