

Development of novel skin penetration enhancement technology by nanoparticulation of hyaluronic acid and collagen and its mechanism

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It is known that hyaluronic acid (HA) and collagen (COL) in the skin decrease with aging and environmental changes, causing wrinkles. It is important to add reduced HA and COL, but it is difficult to deliver water-soluble polymers from the skin into the body. Therefore, in this study, hyaluronic acid collagen nanoparticles were prepared by the poly-ion complex method. Particle size was increase, zeta potential did not change, and PDI was increase, depending on buffer concentration. Transmission electron microscopy images showed that the particles had a particle-like structure. Skin permeability was confirmed with nanoparticles made of fluorescently labeled collagen. As a result, fluorescence was observed in the skin with nanoparticulated collagen compared to non-particulated collagen. Hyaluronic acid collagen nanoparticles were shown to be a potential material for improving skin penetration of water-soluble polymers.