Synopsis of Original Research Paper

Creation of tailor-made type cosmetic materials using human bio-materials –Preparation and properties of composite film consisting of human hair proteins and chitosan–

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The technology of film production is important in the cosmetics and biomedical fields. We have developed convenient procedures for preparing human hair protein films and particles mainly consisting of hard keratins. Chitosan, a polysaccharide composed of D-glucosamine and N-acetyl-D-glucosamine, can form a film and is commercially used in various fields. Thus, we prepared the composite films consisting of human hair proteins and chitosan. The composite films were translucent and formed a micro phase separation structure, which has each crystal of two components. The films consisting of 70-95% hair proteins exhibited higher UV/VIS-absorption around 260-400 nm wavelength over the values that were obtained by summation of each component. The values of water content and contact angle decreased with increasing the content of hair proteins. The heat stability of hair protein was improved by the addition of chitosan. These results suggest that a simple mixing with chitosan can control the properties of the hair protein film including UV-absorption, water content, and contact angle. The composite film can be customized for individuals and will be a promising material with biocompatibility.