

Formation of Polyelectrolyte Complex from Chitosan and Wool Keratose

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Chitosan, a cationic polysaccharide, was heterogeneously depolymerized with hydrogen peroxide to control its molecular weight. The chitosan with different molecular weights was mixed in an acidic aqueous solution with the α -keratose obtained by oxidizing the wool keratin, and the formation behavior of their polyelectrolyte complex (PEC) was observed with a turbidimetric measurement. The effects of sodium chloride, urea, and guanidine hydrochloride on the PEC formation were also examined on the basis of the change of electrostatic and hydrogen-bonding forces probably responsible for the chitosan-keratose complex formation reaction. In addition, the effect of molecular weight of the chitosan on the secondary structure of the keratose in the complex using circular dichroic spectroscopy and differential scanning calorimetry are discussed.