

Biomedical Applications of Self-Assembled Chitosan Nanoparticles

권익찬*, 권승리, 박재형, 정혜선, 김인산¹, 정서영
KIST; ¹경북대 의대
(ikwon@kist.re.kr*)

Chitosan, the N-deacetylated derivative of chitin, has attracted significant interest in a broad range of scientific areas, including biomedical, agricultural, and environmental fields. However, the extended applications of chitosan in biomedical field are frequently limited because it is insoluble in biological solution (pH 7.4). Of chitosan derivatives, glycol chitosan is emerging as a novel carrier of drugs because of its solubility in water and biocompatibility.

In this study, to obtain novel amphiphilic polymers that provide potential applications in biotechnology and medicine, hydrophobically modified glycol chitosans (HGCs) were prepared by covalent attachment of deoxycholic acid or 5 β -cholanic acid to glycol chitosan through amide formation. The self-aggregation behavior and microscopic characteristics of HGCs were investigated by using dynamic light scattering and fluorescence spectroscopy. The HGCs formed self-aggregates in an aqueous phase and their mean diameters were maintained over 15 days in a biological solution (pH 7.4) at 37°C, implying a potential for biomedical application.