

Immobilization of Lysosomal Enzymes on Titanium (IV) Oxide and Its Application

방승혁, 김양훈¹, 민지호*
전북대학교; ¹충북대학교
(jihomin@jbnu.ac.kr*)

To immobilize the effective and specific enzymes on nanomaterials such as nanoparticles, nanofiber and nanotube for stabilizing the activity of free enzymes has developed the various fields. In this results, Lysosomal enzymes isolated from hen`s egg white and *Sacharomyces cerevisiae* were directly immobilized on titanium (IV) oxide (TiO₂) and the immobilization efficiency, antimicrobial activity using viable cell counts against *Escherichia coli*, and stability of lysosomal enzymes immobilized on TiO₂ were evaluated. In addition, enhanced immobilization efficiency was shown in TiO₂ pretreated with a divalent, positively charged ion, Ca²⁺, and the antimicrobial activity for *E. coli* increased as a function of increasing ratio of immobilized enzymes. Furthermore, the degradation of melanin for a week, we could determine the decrease of melanin in lysosomal enzymes immobilized on TiO₂ after examining the effect of different pH of solvent on the immobilization of lysosomal enzymes extracted from *S. cerevisiae* and egg white. Therefore, our results suggest that the various activities of lysosomal enzymes immobilized on TiO₂ may play an important role in applications for antimicrobial agents and cosmetics.