

製備承載含薑黃素的親水性幾丁聚醣/聚麩胺酸奈米載體
之幾丁聚醣傷口敷料於促進傷口癒合之應用探討

**Preparing chitosan wound dressing with hydrophilic curcumin-loaded
chitosan/poly- γ -glutamic acid nanoparticles for wound healing study**

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Injury to skin initiates a cascade of events, including inflammation, proliferation, and remodeling. Wound healing is a dynamic process in which various cellular and matrix components act together to re-establish injured tissue integrity. It was known that curcumin can inhibit wound inflammation reaction and chitosan has the ability to prevent bacterial infection. However, the curcumin is hydrophobic and high concentration curcumin solution may damage cell viability. To overcome the problem, in our study, we prepared chitosan wound dressing which could carry the hydrophilic nanoparticles-encapsulated curcumin for wound healing study. Therefore, we prepared hydrophilic chitosan/poly- γ -glutamic acid nanoparticle which can encapsulate curcumin, thus the nanoparticles can control curcumin release to suitable concentration in surgery wound for a long time. The morphology and structure of the prepared nanoparticles and wound dressing were examined by transmission electron microscopy and scanning electron microscopy. And, we designed several related experiments to compare curcumin-loaded nanoparticles with pure curcumin solution such as 3- (4,5-cimethylthiazol-2-yl)-2,5-diphenyl tetrazolium bromide and nitric oxide assay for cell toxicity and anti-inflammation ability. In the *in vivo* study, it was found that the nanoparticles-encapsulate curcumin in wound dressing demonstrate the potential of such biologically functionalized dressing to accelerate wound closure. Afterward, the characterization of wound dressing in wound healing study will be indeed conducted currently underway.

Keywords: curcumin, chitosan/poly- γ -glutamic acid nanoparticles, wound dressing, anti-inflammatory