探討包覆中草藥奈米粒子抑制大腸癌之效果

The effect of herbal-loaded nanoparticles on human colon cancer inhibition

中文摘要：

本篇研究是以幾丁聚醣和三聚磷酸鹽產生交聯形成奈米粒子作為藥物載體，並且分別包覆兩種中草藥成分-小蘗鹼及薑黃素。本研究重於幾丁聚醣和三聚磷酸鹽的比率、藥物的種類、藥物濃度對藥物包覆率所帶來的影響及包覆中草藥成分奈米粒子的癌細胞吞噬能力和毒殺性。利用紫外光可見光光譜儀、紅外光光譜儀、界面電位量測儀和電子顯微鏡作化學性質及表面結構形態的分析，並以人類大腸腺癌細胞株(colo 205)測試細胞吞噬能力和毒殺性。最後，對其作藥物釋放曲線的研究。

關鍵詞：幾丁聚醣；奈米粒子；中草藥；抗腫瘤；藥物釋放

Abstract:

In this study, the chitosan nanoparticles (CS NPs) as drug carriers are prepared by cross-linking reaction of cationic CS and anionic tripolyphosphate (TPP) to encapsulate two herbal drugs, berberine (BB) and curcumin (CC), respectively. Here, we focused on effects of the ratio of chitosan (CS) and tripolyphosphate (TPP), the type of drug and the concentration of drug loading on drug encapsulation efficiency, in vitro cellular uptake and viability. The herbal-loaded NPs were determined by

ultra violet–visible-near infrared spectrophotometer (UV-VIS-NIR spectrophotometer), Fourier transform infrared (FTIR) spectroscopy, dynamic light scattering (DLS), and scanning electron microscopy (SEM). Moreover, we studied human colon cancer cells (colo 205) which were treated with herbal-loaded NPs and demonstrated its molecular mechanisms in apoptosis. Compared with single drug, herbal-loaded NPs induced five times on growth inhibition, G2/M phase arrest and apoptosis in colo 205 cells.

Keywords: chitosan; nanoparticles; herbal; antitumor; drug release