

治療過敏性皮炎的中草藥膠囊智能服裝

Smart Garment with TCHM Microcapsules for Treating Atopic Dermatitis

用於治療過敏性皮炎的牡丹皮微膠囊及其制備方法和應用

Non-toxic encapsulation technology to prepare Cortex Moutan microcapsules with the ability of controlled-release

專利申請編號及國家: 201210369537.6 (中國)

特色與優點

- 製作一個用來盛載中草藥的無毒性微膠囊
- 使用兩個變量 - 溫度和濕度，來控制中草藥從微膠囊釋放到人體皮膚上的治療用途

應用

- 本發明可以被使用在醫療服裝上作臨床治療
- 製造微膠囊的方法可應用於各種中草藥上

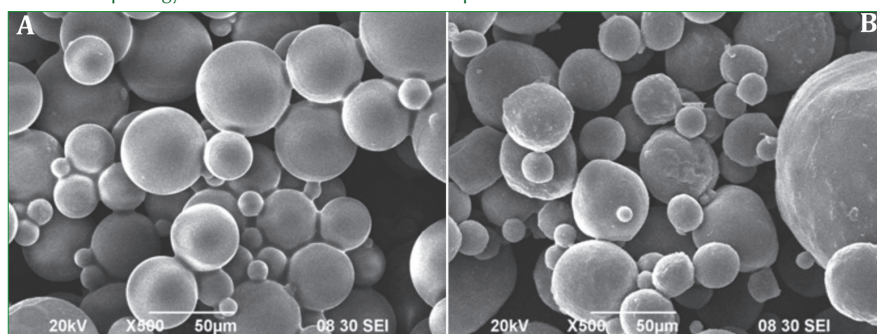
獎項

第41屆瑞士日內瓦國際發明展 - 銅獎 (2013年4月)

一直以來，治療過敏性皮炎的方法是患者需要直接接觸中草藥，但這種方法卻會使他們感到不舒服，而且無法控制其釋放，因而影響其治療成效。有見及此，我們研發一種用來治療過敏性皮炎的牡丹皮微膠囊，它的製作方法是無毒性且其藥性釋放能被控制。同時，我們成功地使用兩個變量-溫度和濕度，以控制中草藥從微膠囊釋放到人體皮膚作臨床治療用途。應用此中草藥膠囊於特選的布料上製造智能服裝，能夠為過敏性皮炎患者提供一個舒適、高效的治療方案。

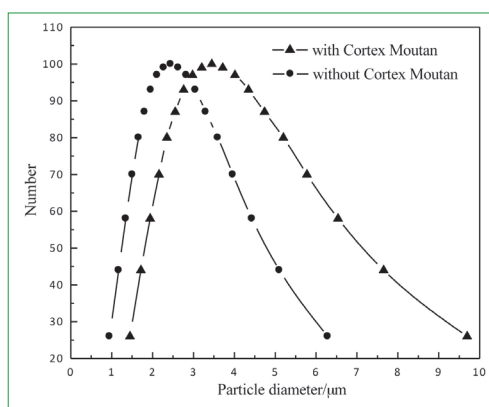
空微膠囊與含有牡丹皮微膠囊的表面形態和尺寸分

Surface morphology and Size distribution of Microcapsules with and without Cortex Moutan

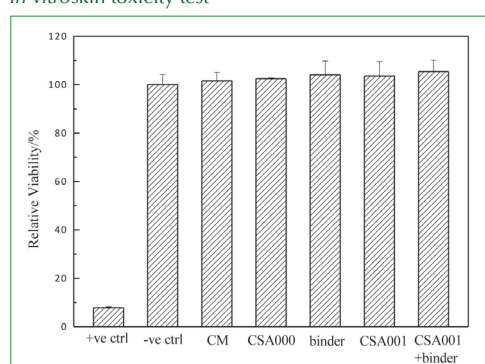


SEM照片(A)最佳狀態下的空白殼聚糖微膠囊；及(B)最佳狀態下的含牡丹皮微膠囊
SEM micrographs of (A) blank chitosan microcapsules prepared under optimum condition without Cortex Moutan; and (B) microcapsules prepared under optimum condition with Cortex Moutan

微膠囊的粒子尺寸分佈圖
Particle size distribution of CSA microcapsules with and without Cortex Moutan

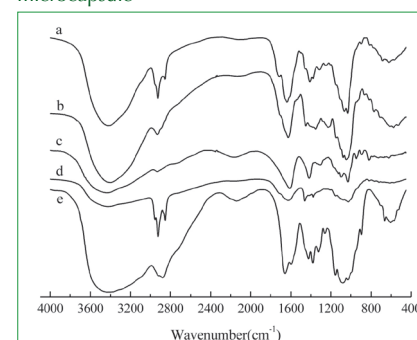


皮膚毒性測試
In vitro skin toxicity test



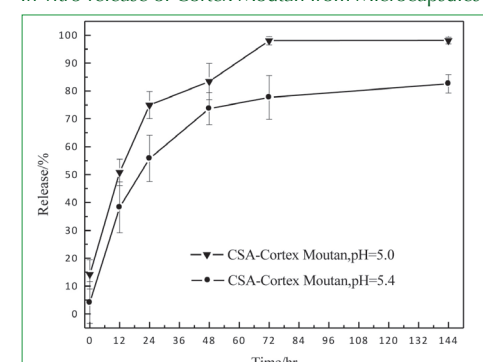
不同的樣品對細胞活力的影響±SD (n = 4)
Effect of different samples on cell viability (CM, CSA000 and CSA001 represent Cortex Moutan, blank CSA and CM-loaded CSA respectively). Values represent mean ± SD (n = 4)

傅里葉變換紅外光譜(FTIR)分析 - 製備封裝牡丹皮的殼聚糖/海藻酸鈉微膠囊
FTIR Analysis - Cortex Moutan was encapsulated in the chitosan/sodium alginate microcapsule

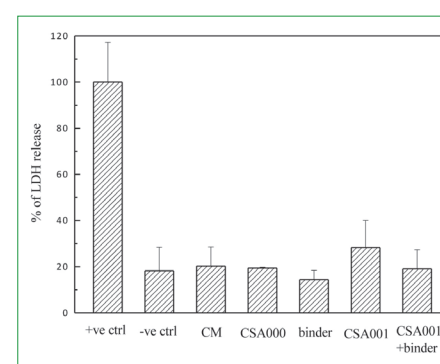


FTIR 光譜: (a) 空白微膠囊; (b) 牡丹皮; (c) 藻酸鈉; (d) 牡丹皮微膠囊 (a)+(b); 和 (e) 殼聚糖
FTIR spectrum of (a) blank CSA microcapsule; (b) Cortex Moutan; (c) sodium alginate; (d) CSA microcapsule loaded with Cortex Moutan (a)+(b); and (e) chitosan

牡丹皮從微膠囊釋放測試
In vitro release of Cortex Moutan from Microcapsules



牡丹皮從微膠囊釋放之效果pH=5.0和pH=5.4(n=3)
Release profiles of Cortex Moutan from CSA microcapsules immersed in PBS of pH= 5.0 and pH= 5.4 (n=3)



不同的樣品對細胞膜的影響±SD (n = 4)
Effect of different samples on cell membrane damage in term of LDH release (CM, CSA000 and CSA001 represent Cortex Moutan, blank CSA and CM-loaded CSA respectively). Values represent mean ± SD (n = 4)

Patent Application No: 201210369537.6 (PRC)

Special Features and Advantages

- Produce a non-toxic microcapsule encapsulated with Traditional Chinese Herbal Medicine
- Use two variables – temperature and humidity to control the release of Traditional Chinese herbal medicine from microcapsule to human skin for clinical treatment

Applications

- The smart garment provides a new method of atopic dermatitis clinical treatment
- Method of producing microcapsule could be applied to encapsulate all kinds of TCHM

Award

Bronze Medal – 41st International Exhibition of Inventions of Geneva, Switzerland (April 2013)

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