國立臺灣大學技術行銷表

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產品/技術名稱	幾丁聚醣/雙官能基酸交聯水膠於皮膚創傷敷料
發明人/單位	謝國煌博士/台灣大學高分子科學與工程學研究所
產品/技術說明	幾丁聚醣(chitosan)為極具發展潛力的生醫材料，近年來已被廣泛應用於骨骼組織修復、藥物釋放系統以及創傷敷料等方面。幾丁聚醣其具有良好的生物性質，例如生物相容性、生物降解性以及抗菌性，且幾丁聚醣對於血液有促進凝結止血的效果。然而幾丁聚醣的低機械性質和快降解速率均限制其應用範圍，特別在具有溶菌酶(lysozyme)的環境下。幾丁聚醣在酸性條件下會形成具有帶正電胺基(amine group)的聚電解質，可和帶負電的聚電解質或生長因子形成錯合物，或是和具有羧基(carboxylic acid)的物質藉由醯胺鍵(amide bond)形成交聯結構，以修飾幾丁聚醣材料的性質。在本專利中，為改善幾丁聚醣低機械性質和快降解速率，使用麩胺酸(glutamic acid)、琥珀酸(succinic acid)以及琥珀酸酐(succinic anhydride)，分別和幾丁聚醣形成交聯水膠，對不同雙官能基酸和交聯程度探討材料的物理化學性質、生物性質，並藉由動物實驗評估幾丁聚醣/雙官能基酸用作創傷敷料的潛力。研究結果顯示，由傷口面積癒合情形和病理組織切片觀察，可發現到幾丁聚醣/雙官能基酸交聯水膠對於傷口的癒合以及組織修復再生有顯著的促進效果；幾丁聚醣敷料有刺激纖維母細胞的增生能力和抑制發炎細胞的作用，而雙官能基酸添加，對於小鼠背部上皮細胞轉移有增進的效果。由實驗結果可知幾丁聚醣/雙官能基酸交聯水膠是極具潛力的創傷敷料。
應用範圍	皮膚傷口
產品/技術優勢	加速癒合燙傷或切割傷傷口
市場潛力	天然高分子
產品/技術 智財權保護方式	專利申請中
圖片 (已公開之成果可提供圖片)	無

Marketing Abstract of NTU's Invention Disclosure

NTU's docket no:_____(由產學合作中心填寫)

CIAC contact： Tel： e-mail：

Title	Chitosan/Diacid Crosslined Hydrogels for Skin Wound Dressing
Inventor (s)	Kuo-Huang Hsieh, Ph.D.
Brief Description	Chitosan is a potential material for biomedical applications. Recently, it is widely applied in bone tissue regeneration, drug delivery systems and wound dressings. Chitosan has outstanding biological properties, including biocompatible, biodegradable and antibacterial ability. Moreover, chitosan has hemostatic ability for promoting blood to coagulate together. However, the applications of chitosan are limited for its low mechanical properties and rapid degradation trend, especially in the environment containing lysozyme. Chitosan existing in acid environment becomes a cationic polyelectrolyte due to its amine group, or form crosslink structure with carboxylic group by composing amide bond. Through this strategy, the properties of chitosan can be modified and enhanced. In this research, in order to enhance the mechanical properties and to ease the biodegradation rate, the glutamic acid, succinic acid and succinic anhydride are applied to form crosslink structure with chitosan separately. Besides, this study investigates physicochemical characterization and biological properties of the crosslinked hydrogels. Via the implant study, animal test was conducted to evaluate the possibility that crosslinked hydrogels could be a potential wound dressing material. Results of wound closure and histological tissue observation showed that chitosan/diacid crosslinked hydrogels could accelerate the process of wound healing and tissue regeneration. The patent reveals chitosan could suppress the infiltration of inflammatory cells and accelerate fibroblast proliferation while the diaicds could enhance epithelial migration.
Fields of Application	Skin wound
Advantages	Acceleration of wound healing process
Market Potential	Natural Polymer
IP Right(s)	
Picture	No