• 系統編號	RN9701-1694
• 計畫中文名稱	類皮質激素神經保護作用之基因體研究計畫---(子計畫四)利用嵌段式聚合奈米體對脊髓進行神經保護基因之傳遞(III)
• 計畫英文名稱	In vivo Oral Neuroprotective Gene (Bcl-xL) Delivery into Spinal Cord Injury (SCI) by Nano Block Biopolymeric Micelles (III)
• 主管機關	行政院國家科學委員會 • 計畫編號 NSC95-3112-B038-004
• 執行機構	台北醫學大學藥學系
• 本期期間	9505 ~ 9604
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• 中文關鍵字	--
• 英文關鍵字	--
• 中文摘要	目的:利用聚合微膠體增加類皮質激素在脊髓停留時間。方法:利用測量微胞體臨界濃度，光散射，源子力顯微鏡等確認其特質後，再以靜脈注射後，利用血液與脊隨濃度，並評估 Bcl-xL 蛋白質與 mRNA 含量來評估。結果:在聚合微膠體濃度超過 0.01%下，可以形成圓形之聚合微膠體且爲平均粒徑爲 60 nm。 在以 1 mg／kg 之類皮質激素聚合微膠體投與後，發現在血漿中有較長停留時間約七倍左右(76.1+／-8.0 to514.3+／-70.0 分鐘)。並且在脊髓中也從 36.4+／-10.8 延長到 10.9+／-22.7 分鐘。在脊髓受損動物模式中，在脊髓地七小時，發現在類皮質激素聚合微膠體投與後，mRNA Bcl-xL 有增加四倍表現能力。
• 英文摘要	Purpose. To investigate the feasibility of long-circulation delivery methylprednisolone (MP), a infusion treatment of spinal cord injury (SCI), to the spinal cord of rabbits using a polymeric micelles (PM). Methods. The characterization of MP with PM was evaluated by critical micelles concentration (CMC), dynamic light scattering (DLS), atomic force microscopy (AFM). Plasma and spinal cord disposition of MP was collected in single intravenous administration to rabbits by HPLC analysis. The anti-apoptotic marker, Bcl-xL protein, was also monitored to SCI animal after delivery MP／PM by quantitative real-time reverse transcription-polymerase chain reaction (RT-Q-PCR) and western blotting. Results. At a concentration of 0.01 % in 25 °C, PM copolymers formed micelles by fluorescence probe and dynamic light scattering test. The size of the aqueous PM with MP was an average of 60 nm with a single, rounded shape detected under atomic force microscopy (AFM). Single dose of 1 mg

／kg of MP／PM were administrated intravenously to rabbits, and HPLC revealed much higher and more persistent levels of MP in plasma levels as well as in spinal cords levels after MP／PM compared with an equal dose of MP. The plasma half-lives (t1／2) of MP with PM increased at 7 folds (from 76.1 +- 8.0 to 514.3 +- 70.0 min). In addition, the spinal cord t1／2 of MP with PM also increased from 36.4 +- 10.8 to 102.9 +- 22.7 min. In spinal cord injury (SCI) model mouse, mRNA Bcl-xL, anti-apoptotic marker, was greatly expression by MP／PM, which was a 4-fold higher dose of MP alone at 7 h.