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| • 系統編號   | RG9113-0472                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        |               |
| • 計畫中文名稱 | Flurbiprofen 水性凝膠之生體外及生體內經皮吸收研究                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |        |               |
| • 計畫英文名稱 | In Vitro and in Vivo Transdermal Delivery of Flurbiprofen from Hydrogels                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        |               |
| • 主管機關   | 行政院衛生署                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | • 計畫編號 | DOH90-TD-1110 |
| • 執行機構   | 台北醫學大學                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |        |               |
| • 本期期間   | 9001 ~ 9012                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        |               |
| • 報告頁數   | 53 頁                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | • 使用語言 | 中文            |
| • 研究人員   | 方嘉佑；黃婉翠；邱顯智；鄭曉菁 Fang, Jia-You；Huang, Woan-Tuey；Chiu, Hsien-Chi；Cheng, Shiao-Chin                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |               |
| • 中文關鍵字  | Flurbiprofen；經皮輸藥系統；經皮吸收；水性凝膠                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |        |               |
| • 英文關鍵字  | Flurbiprofen；Transdermal delivery；Transdermal absorption；Hydrogel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |        |               |
| • 中文摘要   | Flurbiprofen (2-(2-fluoro-4-biphenyl)-propionic acid) 為一種非固醇類抗發炎劑 (Non-steroidal Anti-inflammatory drugs, NSAIDs)。在藥物動力學方面 flurbiprofen 之體內半衰期謹約 3 至 4 小時，，因此基本上 flurbiprofen 合適以經皮輸藥系統方式投與以避免肝臟首渡效應 (first-pass effect) 的發生並達到控制釋出 (controlled release) 的目的以減少投藥頻率。藥物以經皮輸藥方式給予時其載體 (carriers; vehicles) 之不同會明顯影響其經皮吸收能力，今擬以 flurbiprofen 為模式藥物，設計其水性凝膠半固體劑型從事生體外及生體內經皮吸收研究。本計畫將分為生體外評估及生體內評估兩部份進行，在體外評估方面最主要是以人工 cellulose 膜及裸鼠全皮為主要滲透障壁，經由選擇生體外試驗較適宜之處方進行生體內經皮吸收之評估，配合藥物動力學研究檢視 flurbiprofen 於生體內之經皮吸收能力，並與體內實驗數據結果進行比較以評定是否具有相關性。實驗結果顯示 carboxymethyl cellulose 水性凝膠具有較佳之載體效果提供 flurbiprofen 經皮吸收能力，而加入助溶劑後並不會增加 flurbiprofen 之穿透速率。一系列之促進劑中以 d-limonene 此精油成份效果最佳，相反的磷脂質類不但沒有促進效用反而有抑制 flurbiprofen 經皮吸收的效應。體內試驗結果發現在十二小時內大白鼠的血漿中並不含有任何 flurbiprofen 之含量。此計畫之實驗結果可作為未來 flurbiprofen 經皮吸收甚至局部皮膚投與製劑之參考。                                                                                                                                                                                                                                                                                                                                                                                                                                 |        |               |
| • 英文摘要   | 1, Abstract Flurbiprofen is a chiral nonsteroidal anti-inflammatory drug of the 2-arylpropionic acid class. It is one of the most potent inhibitors of platelet aggregation currently available. Because of its short elimination half-life of 3.9 h and requires frequent dosing, a long-term percutaneous absorption of flurbiprofen at a controlled rate is needed. This study is focus on the use of chemicals to alter the skin permeation and drug retained in skin of flurbiprofen. The cellulose polymers with or without charges were used to form hydrogels as the vehicles of flurbiprofen. The result shows that carboxymethyl cellulose-formed hydrogels exhibited an excellent vehicle for flurbiprofen to permeate across skin. The incorporation of cosolvents into hydrogels did not enhance the transdermal flux and drug reservoir in skin for flurbiprofen. The d-limonene, a cyclic monoterpene, showed the highest enhancement for flurbiprofen permeation among a series of enhancers. However, phospholipid retarded the skin permeation of flurbiprofen which was opposite to the other enhancers. In the in vivo experiments, no detectable amount of flurbiprofen was observed in the plasma of rat during 12 h |        |               |

after application of hydrogels with or without d-limonene. The results of this study is helpful for the future development of transdermal or topical application of flurbiprofen.