嘉南藥理科技大學專題研究計畫成果報告

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Tramadol 口服長效間質劑型藥物釋放之研究

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計畫類別：整合型計畫

計畫編號：CNPH94-04

執行期間：94 年　1 月　01 日至　94 年　12 月 31 日

計畫主持人：宋國峻教授

計畫參與人員：

執行單位：嘉南藥理科技大學藥學系

中　華　民　國　95　年　1　月　31 日

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.之參考資料。

中文摘要

本研究之主要目的乃是對不同控釋機轉及不同製程之 Tramadol 長效製劑之一系列研究。Tramadol 為一 Narcotics 類之口服止痛劑，常用於各種急性或慢性疼痛之病人。然欲達到治療之血中濃度，其每天給藥次數較為頻繁，每天至少須給藥 3-4 次。由此，為增加病人使用此藥物之有效性、安定性及方便性，Tramadol 口服長效製劑之基礎研究即成為重要之課題。由於控釋製劑的控釋機轉及製程改變均會對藥物之釋放及吸收造成影響，進而間接影響藥物在血中濃度及治療效果，因此本研究將針對 Tramadol 以 cellulose derivative 及 fatty acid ester 為基質之控釋製劑作一系列釋放及控釋機轉之研究。本研究不但能探討 Narcotics 類藥物於類似製劑之釋放效果，所得到之訊息也可作為工業界未來發展 Tramadol 長效口服製劑

Results and discussion

Tramadol, a narcotics often used in treatment of chronic pain, was used as a water soluble model drug. The various systems studied including hydrophobic matrix, hydrophilic matrix and matrix-film coating systems. The drug release from hydrophobic matrix using various manufacture processes, including wet granulation method and fusion-granulation method, was also evaluated. The results indicate that prolonged tramadol release can be observed by incorporation of drug into both hydrophobic and hydrophilic matrix systems. Drug release from those systems followed a Higuchi release model, suggesting a diffusional release mechanism. The release rate of tramadol was further decreased by coating a rate controlling membrane on top of matrix and the results suggest both matrix as well as coating membrane controlled the release rate. Moreover, the fusion-granulation method provided a better sustaining effect compared to the wet granulation method. Those studies indicate that, by changing the manufacture process and adding rate controlling membrane, an *in vitro* prolonged release of tramadol up to 24

hours can be obtained.

Fig 1: Release profiles of formulation G and H

Formulation G:40% HPMC

Formulation H:40% HPMC+5% coating

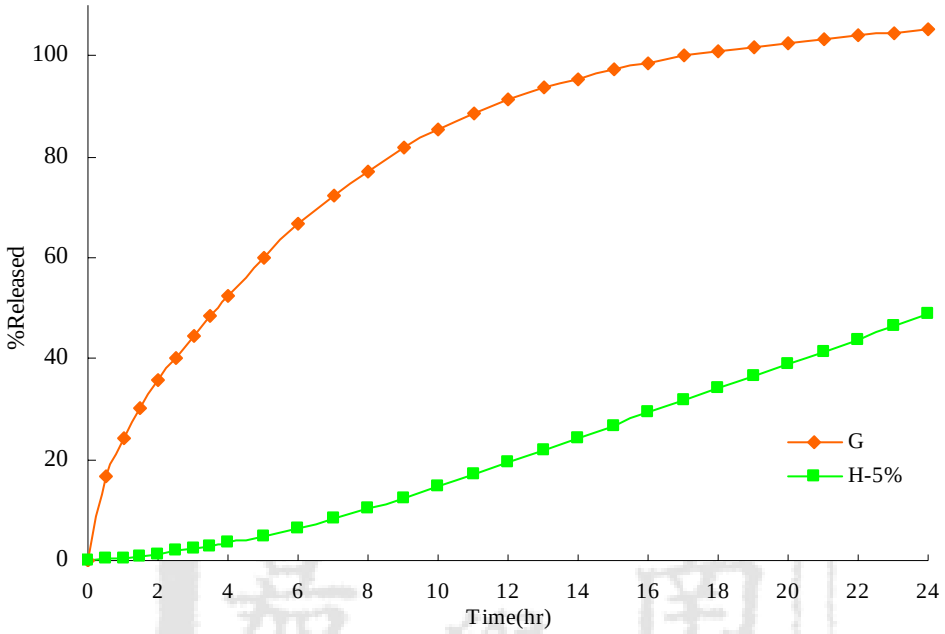

Fig 2: Release profiles of formulation I and J

Formulation I: 30% EC

Formulation J: 30% EC+5% coating