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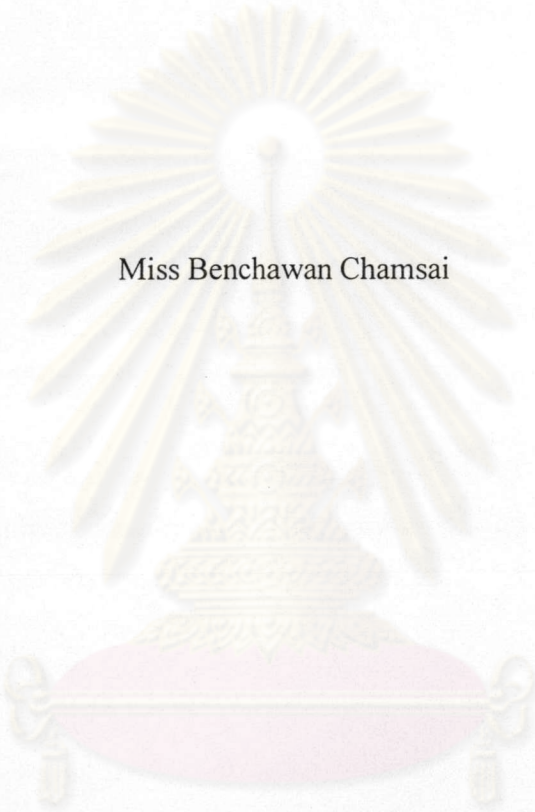
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RELEASE CHARACTERISTICS OF DRUG HAVING DIFFERENT
SOLUBILITIES FROM MATRIX PELLETS CONTAINING GLYCERIDES



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ศูนย์วิทยทรัพยากร
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 เอกซ์ทรูชันสเฟียโรเนชัน โดยใช้กลีเซอรอลโมโนสเตียเรต ไฮโดรจีเนตเทคคอตตอนซีดออย
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 ปลดปล่อยยา คือ ปริมาณของกลีเซอไรด์ ปริมาณของตัวยาสำคัญในเพลเลท ขนาดของเพลเลท
 และกระบวนการอบเพลเลทที่ได้ เพลเลทของโพรพราโนลอลไฮโดรคลอไรด์ไม่สามารถยืดเวลา
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 กลีเซอไรด์ทั้ง 3 ชนิดสามารถยืดระยะเวลาการปลดปล่อยตัวยาได้ถึง 12 ชั่วโมง เพลเลทที่มีขนาด
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 แห้งแบบฟลูอิดไดซ์เบด พบว่าสามารถลดอัตราการปลดปล่อยตัวยาจากเพลเลทที่ประกอบด้วยลูบริเทปได้เมื่อ
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 ระบบที่ประกอบด้วยตัวยาที่มีค่าการละลายน้ำต่ำ การนำเพลเลทเมทริกซ์ไปตอกอัดเป็นเม็ดจะช่วย
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The release properties of drug having different solubilities (propranolol hydrochloride and diclofenac sodium) from the glycerides matrix pellets were investigated. The pellets were prepared using extrusion and spheronization technique. Glyceryl monostearate, hydrogenated cottonseed oil (Lubritab[®]) and glyceryl behenate (Compritol[®]ATO 888) were used as matrix forming agents. Lactose and microcrystalline cellulose (Avicel[®]PH 101) were chosen as pelletization aids. The following factors that might influence the drug release were examined: amounts of glycerides, drug loadings, sizes of pellet, and pellets curing process. The glycerides pellets of propranolol hydrochloride could not provide the prolonged drug release except the formulation containing Compritol[®]ATO 888 that could maintain the release for eight hours. Due to its very low solubility in acidic medium, diclofenac sodium pellets exhibits lower than 3 percent release in 0.1 N HCl throughout the duration of twelve hours, while could give sustained action for twelve hours in phosphate buffer pH 6.8 with all glycerides employed. Smaller sizes of the pellets were found to give the faster release of the drugs. The addition of polyethylene glycol 1450 (PEG 1450) and polysorbate 80 (Tween[®] 80) into diclofenac sodium pellets did not exerted an increasing effect on drug release in acidic medium. Following the curing of propranolol hydrochloride matrix pellets in fluidized bed dryer, only Lubritab[®] containing pellets showed reduction of drug release compared with uncured pellets. It could be concluded that the glyceride pellets matrix might be suitable for low solubility drug substance. If more prolonged release action is required, the pellets should be compressed into the tablet matrices. As it was shown, the matrix tablets prepared by compression of the pellets provided the better-sustained release actions of both propranolol hydrochloride and diclofenac sodium.

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LIST OF ABBREVIATIONS

°C	degree Celsius
DI	deionized
DS	diclofenac sodium
DSC	differential scanning calorimetry
e.g.	exempli gratia (for example)
et al.	Et alli, and others
g	gram(s)
GMS	glyceryl monostearate
HCl	hydrochloric acid or hydrochloride
hr	hours
IR	infrared
k	rate constant
No.	number
MCC	microcrystalline cellulose (Avicel® PH 101)
mg	milligram(s)
min	minute(s)
ml	milliliter(s)
mm	millimeter(s)
%	percentage
PEG	polyethylene glycol
pH	the negative logarithm of the hydrogen ion concentration
pK _a	the negative logarithm of the dissociation constant
PL	propranolol hydrochloride
q.s.	make to volume
®	Registered
r ²	coefficient of determination
rpm	revolution per minute
RT	room temperature
SEM	Scanning Electron Microscope
µg	microgram
UV-VIS	ultraviolet-visible

LIST OF ABBREVIATIONS (cont.)

w/v	weight by volume
w/w	weight by weight
λ	wavelength
λ_{\max}	wavelength of maximum absorbance
>	more than
<	less than



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จุฬาลงกรณ์มหาวิทยาลัย