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คุณสมบัติการปลดปล่อยตัวทำ แบบออกฤทธิ์ที่นานของอนุภาค
ซึ่งเคลือบด้วยสารผสมของโพรพวาโนลอล ไฮโดรคอลลอยด์ และเอทิลเซลลูโลส



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SUSTAINED RELEASE PROPERTIES OF THE BEADS COATED WITH
THE MIXTURES OF PROPRANOLOL HYDROCHLORIDE AND ETHYLCELLULOSE



MR. ANUCHIT SANPRASERT

ศูนย์วิทยทรัพยากร
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Release characteristics of propranolol hydrochloride dispersed in ethylcellulose film coated on the surface of the beads using fluidized-bed technique were investigated. Size classified sucrose crystal and inert pellet were employed as coating cores. The influence of content and type of plasticizer, the volume of coating solution on drug release rate were studied. The hydrophobic plasticizer (glycerylmonostearate and castor oil) was found to retard drug release more than hydrophilic plasticizer (PEG 4000) When the thickness of drug dispersed film increased, the release of drug decreased. However, the release of the drug from the coated film was not prolonged enough to meet the requirement of sustained release product. Therefore, outercoating with only ethylcellulose film was used to reduce drug release rate as required. The outercoating could provide the release of propranolol hydrochloride in compliance with the compendial requirement. This process offered good reproducibility of drug release rate from the coated beads of different production lots.



ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

ภาควิชา.....เภสัชอุตสาหกรรม
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ปีการศึกษา.....2538

ลายมือชื่อนิติ.....
ลายมือชื่ออาจารย์ที่ปรึกษา.....
ลายมือชื่ออาจารย์ที่ปรึกษาร่วม.....

พิมพ์ต้นฉบับบทคัดย่อวิทยานิพนธ์ภายในกรอบสี่เหลี่ยมนี้เพียงแผ่นเดียว

อนุชิต สันประเสริฐ : คุณสมบัติการปลดปล่อยตัวยาแบบออกฤทธิ์นานของอนุภาค ซึ่งเคลือบด้วยสารผสมของ โพรพรานอลอล ไฮโดรคลอไรด์ และ เอธิลเซลลูโลส (SUSTAINED RELEASE PROPERTY OF THE BEADS COATED WITH THE MIXTURES OF PROPRANOLOL HYDROCHLORIDE AND ETHYLCELLULOSE) อาจารย์ที่ปรึกษา : ผศ.ดร. พจน์ ภูถวานิช . 246 หน้า ISBN 974-632-634-1

ศึกษาลักษณะการปลดปล่อยตัวยาโพรพรานอลอล ไฮโดรคลอไรด์ จากแผ่นฟิล์มโดยใช้หลักการกระจายตัวยาในสารกึ่งฟิล์มเอธิล-เซลลูโลส เคลือบบนอนุภาคแกนที่ปราศจากตัวยา โดยใช้การเคลือบแบบฟลูอิดโคซ์เบต อนุภาคแกนที่ใช้คือ ผลึกน้ำตาลทรายคัตขนาดและเพลเลตทรงกลม ได้ศึกษาอิทธิพลของชนิดและปริมาณของพลาสติกไซเซอร์ ความแตกต่างของปริมาณน้ำยาเคลือบที่ใช้ต่ออัตราการปลดปล่อยตัวยา พลาสติกไซเซอร์ชนิดไม่ชอบน้ำได้แก่ กลีเซอรอลโมโนสเตียเรต และน้ำมันละหุ่ง จะมีผลต่อการชะลอการปลดปล่อยตัวยามากกว่าชนิดชอบน้ำเช่น โพลีเอธิลีน ไกลคอล 4000 ความหนาของการเคลือบบนอนุภาคเพิ่มมากขึ้น อัตราการปลดปล่อยตัวยาจะช้าลง อย่างไรก็ตามการปลดปล่อยตัวยาจากแผ่นฟิล์มยังมีอัตราเร็วสูงไม่เข้าข่ายเป็นเภสัชภัณฑ์ออกฤทธิ์นาน ดังนั้นจึงใช้การเคลือบหับซ้ำด้วยฟิล์มเอธิลเซลลูโลสซึ่งปราศจากตัวยา เพื่อปรับอัตราการปลดปล่อยตัวยาให้ช้าลงตามที่ต้องการ ซึ่งการเคลือบหับซ้ำสามารถปรับการปลดปล่อยตัวยาให้อยู่ในเกณฑ์ที่กำหนดของเภสัชตำรับได้ และพบว่า เมื่อนำเทคนิคการผลิตเภสัชภัณฑ์ชนิดออกฤทธิ์นานวิธีนี้มาใช้ในการผลิตแต่ละครั้งจะให้ผลการปลดปล่อยตัวยาที่ไม่แตกต่างกัน



ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

ภาควิชา เภสัชอุตสาหกรรม
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ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย



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Abbreviations

bar	kg/cm ²
°C	degree celcius
cm	centimeter
Conc.	Concentration
KtOH	Ethanol
EC	Ethylcellulose
g	gram
GI	Gastrointestinal
HCl	Hydrochloric acid
HPMC	Hydroxypropylmethyl cellulose
hr.	hour
lbs	pounds
min.	minute
mg	milligram
ml	milliliter
ml/min	milliliter per minute
N	Normal
NaOH	Sodium hydroxide
nm	nanometer
PEG 4000	Polyethylene glycol 4000
SD	Standard deviation
SEM	Scanning Electron Microscope
UV	ultraviolet
wt.	weight
μm (μ)	micrometer