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ลิขสิทธิ์ของบัณฑิตวิทยาลัย จุฬาลงกรณ์มหาวิทยาลัย

THE DEVELOPMENT OF PROPRANOLOL HYDROCHLORIDE
MICROPOROUS OSMOTIC PUMP

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พิมพ์ต้นฉบับบทคัดย่อวิทยานิพนธ์ภายในกรอบสี่เหลี่ยมนี้เพียงแผ่นเดียว

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ปัจจัยต่างๆที่มีผลต่อการปลดปล่อยตัวยาออกจากระบบนำส่งยาโพรปราโนลอล ไฮโดรคลอไรด์ออสโมติกปั๊มเช่น ชนิดของสารพลาสติกไซเซอร์, ปริมาณของสารพลาสติกไซเซอร์, ชนิดของสารก่อแรงดันออสโมติก, ขนาดของช่องนำส่งยา เป็นต้น จะถูกประเมินผลโดยการศึกษาลักษณะทางกายภาพ และด้วยการศึกษา ลักษณะในการปลดปล่อยตัวยาออกจากระบบนำส่งยา ซึ่งพบว่าการใช้สารโพลีเอททิสีน ไกลคอล 400 เป็นสาร พลาสติกไซเซอร์จะส่งผลให้ตัวยาถูกปลดปล่อยออกมามากกว่าการใช้สารไดบิวทิว พาทาเลท ภาพถ่ายจากกล้องจุลทรรศน์อิเล็กตรอนแสดงให้เห็นว่าผนังของฟิล์มที่มีสารโพลีเอททิสีน ไกลคอล 400 เป็นองค์ประกอบจะมี ลักษณะที่เป็นรูพรุนภายหลังจากการศึกษาลักษณะการปลดปล่อยตัวยา แต่ผนังของฟิล์มที่มีสารไดบิวทิว พาทาเลทเป็นองค์ประกอบจะมีลักษณะที่เรียบเมื่อเพิ่มปริมาณของสารโพลีเอททิสีน ไกลคอล 400 พบว่าตัวยาจะถูกปลดปล่อยออกมามากขึ้น ผลของภาพถ่ายจากกล้องจุลทรรศน์อิเล็กตรอนแสดงให้เห็นว่า รูที่ผนังของฟิล์มจะมีลักษณะที่ใหญ่มากขึ้น ผลเช่นนี้ยังคงเกิดขึ้นเมื่อมีการใช้สารโพลีเอททิสีน ไกลคอล 4,000 แต่เมื่อทำการเพิ่มปริมาณของสารไดบิวทิว พาทาเลทกลับพบว่าตัวยาที่ถูกปลดปล่อยออกมากลับไม่แตกต่างกัน โดยผลจากภาพถ่ายชี้ว่า ผนังของฟิล์มยังคงมีความเรียบไม่แตกต่างกันเมื่อทำการเติมสารก่อแรงดันออสโมติก ชนิดต่างๆในยาเม็ดผลที่ได้พบว่า หากสารที่เติมสามารถให้แรงดันออสโมติกที่สูงแล้วตัวยาที่ถูกปลดปล่อย ออกมาก็จะมีปริมาณมากตามไปด้วย ในแง่ของขนาดช่องนำส่งยานั้นพบว่า ขนาดของช่องนำส่งยา จะมีผลต่อการปลดปล่อยยาออกจากระบบนำส่งยาเมื่อปริมาณของสารโพลีเอททิสีน ไกลคอล 400 ในชั้นฟิล์มมีมากขึ้น

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สาขาวิชาเภสัชอุตสาหกรรม.....
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ลายมือชื่ออาจารย์ที่ปรึกษา
ลายมือชื่ออาจารย์ที่ปรึกษาร่วม

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There are several factors affecting the release of drug from the propranolol hydrochloride osmotic pump devices ; such as the plasticizer type, the level of plasticizer in coated film, the type of osmotic agents within osmotic devices, the passageway size, etc. The effect of many factors was evaluated by using the scanning electron microscope and the release characteristic. The results displayed that Polyethylene glycol 400 supported the release of drug from osmotic devices whereas Dibutyl phthalate suppressed the release of drug. The microporous membrane and sponge-like structure were created after the osmotic devices were coated with cellulose acetate plasticized with PEG 400 and were exposed in water. For the osmotic devices coated with cellulose acetate plasticized with DBP, the non-porous membrane was observed even when the osmotic devices was in contact attracted with water. The release of the drug from osmotic devices increased as the level of PEG 400 in coated film increased. The photomicrographs demonstrated that the size of the porosity of the film was increased with increasing level of PEG 400. In the case of PEG 4000, the results were also similar to PEG 400. The release of drug from osmotic devices was not altered when the levels of DBP in coated film increased. The photomicrographs of DBP plasticized film coated osmotic devices was the same although the level of DBP in coated film increased. However, the amount of drug release from osmotic devices increased with increasing osmotic pressure within the devices and decreased with increasing osmotic pressure of the dissolution medium. In consideration of the passageway size, the drug release rate from osmotic devices was indifferent although the size was increased from 400 to 1500 μm .

ภาควิชา.....เภสัชอุตสาหกรรม

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LIST OF ABBREVIATIONS

°C	degree celsius (centigrade)
cm	centimeter (s)
DBP	dibutyl phthalate
e.g.	exempli gratia, for example
et al.	Et alii, and others
hr	hour (s)
i.e.	id est, that is
TI	thrrapeutic index
mcg	microgram (s)
min.	minute (s)
mg	milligram (s)
ml	milliliter (s)
mm	millimeter (s)
N	normality
nm	nanometre (s)
pH	the negative logarithm of the hydrogen ion concentration
qs.	make to volume
rpm	revolution per minute
SEM	scanning electron microscope
USP	The United States Pharmacopoeia
UV	ultraviolet