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EFFECTS OF PROCESSING VARIABLES OF SPRAY DRYING TECHNIQUE
ON PHYSICAL PROPERTIES OF
CONTROLLED RELEASE THEOPHYLLINE MATRICES

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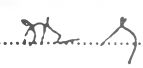
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พิมพ์ต้นฉบับบทคัดย่อวิทยานิพนธ์ภายในกรอบสี่เหลี่ยมนี้เพียงแผ่นเดียว

ริทาลักษณ์ ปฐมชัยวิวัฒน์ : ผลของตัวแปรในกระบวนการเทคนิคสเปรย์ทรายต่อคุณสมบัติทางกายภาพของธีโอฟีลลิน เมทริกซ์ชนิดควบคุมการปลดปล่อย (EFFECTS OF PROCESSING VARIABLES OF SPRAY DRYING TECHNIQUE ON PHYSICAL PROPERTIES OF CONTROLLED RELEASE THEOPHYLLINE MATRICES) อาจารย์ที่ปรึกษา : ผศ.ดร. พจน์ กุลวานิช, 167 หน้า ISBN 974-583-354-1

การผลิตธีโอฟีลลินเมทริกซ์ชนิดควบคุมการปลดปล่อยโดยใช้เทคนิคสเปรย์ทราย ด้วยการศึกษอิทธิพลของตัวแปรต่างๆในกระบวนการสเปรย์ทรายต่อคุณสมบัติของผงสเปรย์ทราย รวมทั้งลักษณะการปลดปล่อยของตัวยาจากเมทริกซ์ที่เตรียมได้ ตัวแปรต่างๆที่น่าสนใจมาศึกษาคือ อุณหภูมิของลมเข้า อัตราการป้อนสารระหว่างสเปรย์ทราย ความดันของการพ่นฝอย และความเข้มข้นของสารละลายที่ใช้ระหว่างการผลิต ผงสเปรย์ทรายที่ได้มีการกระจายของตัวยาสม่ำเสมอ และไม่มีผลกระทบจากตัวแปรต่างๆของกระบวนการผลิต อิทธิพลของตัวแปรต่างๆนั้นไม่มีผลต่อการเปลี่ยนแปลงลักษณะการปลดปล่อยของตัวยาสำคัญ ยกเว้นอุณหภูมิของลมเข้า และเมื่อใช้สารละลายสำหรับกระบวนการสเปรย์ทรายที่มีความเข้มข้นค่อนข้างสูง (25%) การเพิ่มอุณหภูมิของลมเข้าทำให้อัตราการปลดปล่อยตัวยาลดลงอย่างชัดเจน ผลของแรงตอกที่ใช้ในการเตรียมเมทริกซ์ไม่เปลี่ยนแปลงลักษณะการปลดปล่อยของตัวยามากนัก เมทริกซ์ที่เตรียมจากผงสเปรย์ทรายซึ่งได้จากครั้งที่ผลิตที่ต่างกันให้ผลการปลดปล่อยตัวยาที่เหมือนกัน

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ลายมือชื่อนิติ 
ลายมือชื่ออาจารย์ที่ปรึกษา 
ลายมือชื่ออาจารย์ที่ปรึกษาร่วม

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Manufacture of controlled release theophylline matrices using spray drying process was studied. The influences of processing variables including the inlet air temperature, the feed rate of the spray drying solution, the atomizing air pressure and the concentration of feed solution on physical properties of the spray dried powders and on the release characteristics of the resultant matrices were investigated. This technique provided uniform distribution of drug in spray dried products which were not affected by processing variables used. The dissolution behaviors of matrices were not sensitive to processing variables except the inlet air temperature in the drying chamber and at the high concentration of solution (25%). With an increase in inlet air temperature, there was a reduction in drug release rate. The effect of tableting process on release pattern of the spray dried matrices was also studied. Variation of compressional force during tableting did not remarkably alter the drug release of the matrices. This process offered good reproducibility of drug release rate from matrices of different production batches.

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ABBREVIATIONS

bar	Kg/cm ²
°C	degree celsius
cm	centimeter
g	gram
HCl	Hydrochloric acid
hr	hour
IR	Infrared
kg	kilogram
kp	kilopound
L	liter
lb	pound
mg	milligram
min	minute
ml	milliliter
nm	nanometer
N	normal
NaOH	Sodium hydroxide
NH ₃	Ammonia
rpm	revolution per minute
SD	standard deviation
UV	ultraviolet
µm	micrometer