

ผลของแรงดึงดูดของการแตกตัวของยาเม็ดที่ประกอบด้วย

สารช่วยแตกตัวที่มีกลไกต่างกัน



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EFFECT OF COMPRESSIONAL FORCE ON DISINTEGRATION OF TABLETS
CONTAINING DISINTEGRANTS OF DIFFERENT MECHANISMS



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สรการ ทองเปล่งศรี : ผลของแรงดึงดูดต่อการแตกตัวของยาเม็ดที่ประกอบด้วยสารช่วย
แตกตัวที่มีกลไกต่างกัน (EFFECT OF COMPRESSIONAL FORCE ON DISINTEGRATION OF
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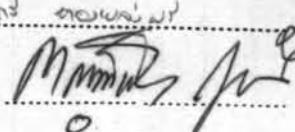
การศึกษาทดลองของแรงดึงดูดต่อการแตกตัวของยาเม็ดที่เตรียมจาก dicalcium phosphate dihydrate และ α -lactose monohydrate ซึ่งประกอบด้วยสารช่วยแตกตัวที่มีกลไกต่างกัน 4 ชนิดและในปริมาณที่ต่างกัน คือ sodium starch glycolate, cross linked polyvinylpyrrolidone, microcrystalline cellulose และ corn starch หลังจากที่ตอกด้วยแรงดึงดูดที่ต่างกัน 4 ระดับคือ 1200, 1800, 2400 และ 3000 ปอนด์กิ๊นนำไปประเมินผลโดยการหาเวลาที่ใช้ในการแตกตัว การคุณน้ำและการคุณความชื้น

จากผลการทดลองพบว่าแรงดึงดูดมีผลต่อการแตกตัวของยาเม็ดที่เตรียมขึ้นเป็น 2 ลักษณะคือ ลักษณะแรก เวลาที่ใช้ในการแตกตัวลดลงเมื่อแรงดึงดูดเพิ่มขึ้น กรณีจะเกิดกับยาเม็ดที่เตรียมจาก dicalcium phosphate dihydrate และ α -lactose monohydrate ที่มี cross linked polyvinylpyrrolidone และ corn starch เป็นสารช่วยแตกตัว และยาเม็ดที่เตรียมจาก α -lactose monohydrate ที่มี sodium starch glycolate เป็นสารช่วยแตกตัวอีกลักษณะหนึ่ง เวลาที่ใช้ในการแตกตัวเพิ่มขึ้นเมื่อแรงดึงดูดเพิ่มขึ้น กรณีจะเกิดขึ้นกับยาเม็ดที่เตรียมจาก dicalcium phosphate dihydrate ที่มี microcrystalline cellulose เป็นสารช่วยแตกตัวและยาเม็ดที่เตรียมจาก dicalcium phosphate dihydrate ที่มี sodium starch glycolate เป็นสารช่วยแตกตัวซึ่งผลที่ได้นี้สามารถอธิบายได้โดยอาศัยกลไกการคุณน้ำที่ต่างกันของยาเม็ด

จากการของ Washburn ซึ่งใช้อิบยาการคุณน้ำเข้ายาเม็ดก็พบว่ามีปัจจัยอยู่ 3 ประการที่มีผลต่อการการแตกตัวของยาเม็ดที่ประกอบด้วยสารช่วยแตกตัวที่มีกลไกต่างกันคือ ความหนืดของของเหลวที่ซึมเข้าในยาเม็ด ขนาดและจำนวนของช่องว่างในยาเม็ดและสภาวะผิวน้ำของยาเม็ด

ศูนย์วิทยทรัพยากร จุฬาลงกรณ์มหาวิทยาลัย

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ตามมือชื่ออาจารย์ที่ปรึกษา 

CHAKRI THONGPLENGSRE : EFFECT OF COMPRESSIONAL FORCE ON DISINTEGRATION OF TABLETS CONTAINING DISINTEGRANTS OF DIFFERENT MECHANISMS.
THESIS ADVISOR : LECTURER SIRISAK DUROMGPISUDTHIGUL AND ASSIST.
PROF. GARNPIMOL C. RITTHIDEJ, 191 PP.

The effect of compressional force on the disintegration time of tablets prepared from dicalcium phosphate dihydrate and α -lactose monohydrate containing four disintegrants of differing disintegration mechanisms, sodium starch glycolate, cross linked polyvinylpyrrolidone, microcrystalline cellulose and corn starch in varying percentage were studied. Tablets were compressed with instrumented single punch machine at four different forces 1200, 1800, 2400 and 3000 pounds and evaluated for disintegration time, water penetration and moisture sorption.

The results show that the effect of compressional force on disintegration time can be revealed into two types of disintegration behavior. The first type, disintegration time decreased with an increase in compressional force of tablets prepared from dicalcium phosphate dihydrate and α -lactose monohydrate containing cross linked polyvinylpyrrolidone and corn starch and tablets prepared from α -lactose monohydrate containing sodium starch glycolate. The second type, disintegration time increased with an increase in compressional force of tablets prepared from dicalcium phosphate dihydrate and α -lactose monohydrate containing microcrystalline cellulose and tablets prepared from dicalcium phosphate dihydrate tablets containing sodium starch glycolate. These results are discussed in terms of the differing mechanisms where these substances act during water penetration.

Application of Washburn's equation to water penetration can provide a quality profile of disintegration that involved viscosity, pore size, surface condition.

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ดำเนินการของอาจารย์ที่ปรึกษา *J.C. Ritthidej*



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ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

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ศูนย์วิทยบรังษี
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