

嘉南藥理學院專題研究計畫成果報告

計畫名稱：黏合劑對含超級崩散劑錠劑在不同酸鹼度之溶離速率影響

計畫編號：CNPH-88-01

執行期間：87年9月1日至88年6月30日

計畫類別：個別型

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摘要

摘要文

Sucrose was known to cause the dissolution difference of tablets containing super disintegrant Ac-Di-Sol/Primojel between acidic and neutral media. In order to understand further the mechanism of this phenomenon, various binders were tried. Prejel, PVP, gelatin, glucose did not cause the dissolution difference as sucrose. Only fructose caused the dissolution difference. Sucrose hydrolyzed into fructose and glucose in the acidic medium. Maybe the real cause of dissolution difference by sucrose is due to the hydrolysis of sucrose into fructose.

關鍵字：dissolution; super disintegrant; pH

INTRODUCTION

In our previous study (1), we have found that the dissolution of an hydrophobic drug in the acidic medium was greatly decreased in a tablet containing Ac-Di-Sol/Primojel and sucrose. This phenomenon was attributed to the decreased efficiency of Ac-Di-Sol/Primojel in the acidic medium, the hindered diffusion of water inside the tablet by the hydrophobic ingredient and the viscosity-producing property of sucrose. The purpose of this study is to investigate the hypothesis of viscosity-producing effect of sucrose and other binders on the dissolution difference between acidic and neutral media.

EXPERIMENTAL

Tablets containing a binder of glucose, prejel, gelatin, fructose, polyvinylpyrrolidone, fructose at various concentration were prepared. The disintegration and dissolution of the tablet in the deionized water and simulated gastric fluid (without enzyme) was conducted according to USP 23ed.

Formula A : allopurinol 100 mg + sucrose 100 mg + Ac-Di-Sol 8 mg

Formula B : allopurinol 100 mg + prejel 50 mg + Ac-Di-Sol 8 mg

Formula C : allopurinol 100 mg + prejel 100 mg + Ac-Di-Sol 8 mg

Formula D : allopurinol 100 mg + PVP 5 mg + Ac-Di-Sol 8 mg

Formula E : allopurinol 100 mg + glucose 100 mg + Ac-Di-Sol 8 mg

Formula F : allopurinol 100 mg + glucose 200 mg + Ac-Di-Sol 8 mg

Formula G : allopurinol 100 mg + gelatin ? mg + Primojel 8 mg

Formula H : allopurinol 100 mg + prejel ? mg + Primojel 8 mg
Formula I : allopurinol 100 mg + fructose 100 mg
Formula J : allopurinol 100 mg + fructose 100 mg + Ac-Di-Sol 4 mg
Formula K: allopurinol 100 mg + fructose 100 mg + Ac-Di-Sol 8 mg
Formula L: allopurinol 100 mg + fructose 200 mg + Ac-Di-Sol 8 mg
Formula M: allopurinol 100 mg + fructose 100 mg + Primojel 8 mg
Formula N: allopurinol 100 mg + fructose 100 mg + Polyplasdone XL 8 mg

RESULTS AND DISCUSSION

Allopurinol tablets containing prejel, gelatin, PVP, and super disintegrant Ac-Di-Sol/Primojel did not show dissolution difference between acidic and neutral medium.

It was found that only fructose causes the greatest dissolution difference between acidic and neutral medium. The other binders didn't cause the dissolution difference despite of high concentration were used. It seems to be that the strength of binder is not the decisive factor of dissolution difference. Sucrose is hydrolyzed into glucose and fructose in the acidic environment. Probably the interaction of fructose between superdisintegrant is the real cause of dissolution difference and is our next goal of study.

Tablets containing fructose and super disintegrant polyplasdone XL also did not show dissolution difference, which is consistent to our previous study.

REFERENCE

- 1) Chun-Ren Chen, Yaw-Hung Lin, Shu-Ling Cho, Shu-Yang Yen and Hsueh-Ling S. Wu. Investigation of the Dissolution Difference between Acidic and Neutral Media of Acetaminophen Tablets Containing a Super Disintegrant and a Soluble Excipient. Chem. Pharm. Bull. 45 (1997), 509-512
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