

Abstract

Charles University, Faculty of Pharmacy in Hradec Králové

Department of: Department of Pharmaceutical Technology
Consultant: PharmDr. Pavel Ondrejček, Ph.D
Student: Lenka Rumlerová
Title of Thesis: The effect of rice extract on the compressibility and mechanical properties of microcrystalline cellulose tablets.

This thesis deals with influence of rice extract, as a new kind of glidant on compressibility of microcrystalline cellulose as a model filler. Furthermore it evaluates the impact of rice extract on tablet properties. Effects of rice extract were compared with two standard glidants - magnesium stearate and colloidal silicon dioxide. As first the influence of different glidants concentrations on flow properties of mixtures were assessed. Tablets were compressed using three different compression forces. A force-displacement record was used to evaluate the compressibility of microcrystalline cellulose and its mixtures with glidants. Subsequently, the properties of tablets were evaluated. The radial strength, abrasion, and tablet disintegration time were measured.

The results revealed that the rice extract has the least effect on mixtures flow properties. However, all mixtures showed a statistically significant improvement in flowability. When using a 1 % rice extract, the flow properties of the mixture were comparable to a mixture containing 0.5 % magnesium stearate. In most force-displacement parameters, the addition of rice extract has no statistically significant effect. Friability of tablets with rice extract remained on the same level or even lower than those made of microcrystalline cellulose alone. Other glidants increased tablet's friability. The rice extract affected the tablet strength the least. On the other hand it significantly prolonged tablet disintegration time. Probably, just like colloidal silicon dioxide, the rice extract is also involved in bond creation in tablets.