

ABSTRACT

Charles University in Prague, Faculty of Pharmacy in Hradec Králové

Department of Pharmaceutical Technology

Student: Natália Pribylincová

Consultant: Doc. RNDr. Milan Řehula, CSc.

Effect of ascorbic acid on the parameters of compression equation

Many mathematical models describing the compressing process are widely used in the development of new medicinal products in form of tablets. This process can be evaluated by means of compaction equations or throughout the viscoelastic properties. Compaction equation expresses dependency on height, volume or density of the used material which is being compressed by the applied compacting pressure. Based on the gained parameters, it is possible to describe specifically various stages of the compaction process, to determine characteristic properties of the studied material and accordingly to examine its mechanism.

This thesis deals with the impact of the ascorbic acid on the parameters of compaction equation. The paperwork evaluates a mixture consisting of ascorbic acid (AA) and microcrystalline cellulose (MCC) in the ratio of MCC : AA 100:0, 75:25, 50:50, 25:75, 0:100. The mostly used compression equations are described in the theoretic part. The three – exponential equation by Řehula created at the Department of Pharmaceutical Technology at Charles University in Hradec Králové has been used for evaluation of the experimental part.

From the results of this work turned out that parameters a_1 , E_1 and $1/t_1$ decrease with the amount of the microcrystalline cellulose during the pre – compaction phase, the parameters a_2 and E_2 during the elastic deformation phase decrease either. The amount of MCC doesn't have any influence on the parameter $1/t_2$. In the last phase, the value of parameters a_3 , E_3 increases, on the other hand, $1/t_3$ decreases. Given variations might be affected by the surface properties of tested substances together with poor flow properties.