

Abstract

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Compacting process is mathematically expressed by compression equations. It is characterized by various parameters of equations. The equation expresses the dependence of the volume, density and height on compacting pressure. In this paperwork, the parameters of compacting equation are evaluated and the pre-loading phase, the phase of elastic deformation and the phase of plastic deformation are studied. This thesis deals with impact of ibuprofen on the parameters of compaction equation. Five mixtures which included microcrystalline cellulose and ibuprofen in different ratio 100:0, 75:25, 50:50, 25:75 and 0:100 were studied. Results were based on the three-exponential equation. They were evaluated thanks to box plots.

From the results obtained, it is obvious that with decreasing amount of microcrystalline cellulose, the parameter a_1 has increased and the parameter E_1 also slightly has increased. The composition of the used material didn't have any huge influence on parameters $1/t_1$ and pH_1 . During the phase of elastic deformation, the parameters a_2 and E_2 with decreasing amount of ibuprofen have decreased. On the other hand, the speed of reduction has increased and the parameter pH_2 has decreased. In the phase of plastic deformation, the parameters a_3 , E_3 have decreased with decreasing amount of MCC in the range of 100%-75%. During the next decrease of MCC in the range of 75%-0% this parameters have grown. Similar dependency resulted from the mechanical resistance of tablets as well.