

Abstract

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Title of Thesis: Evaluation of disintegration time of tablets containing theophylline

The influence of used fillers on energetic profile of compression, especially influence on disintegration time of tablets with theophylline as a model drug, was studied in this thesis. Four tablet fillers were studied – microcrystalline cellulose Comprecel 102, lactose SpheroLac 100, calcium hydrogen phosphate anhydrous Di-Cafos A150 and calcium hydrogen phosphate dihydrate Di-Cafos D160. Tablets contained different proportion of two fillers, theophylline as a model drug and lubricant magnesium stearate.

Tablets were compressed by the same compaction force 10 kN. The force-displacement record was evaluated using the particular energies of compaction process. Parameters of compaction process were influenced mostly by Comprecel 102. According to results there is no possibility to replace Di-Cafos D160 with Di-Cafos A150 in the mixtures. It was also found that SpheroLac 100 and Di-Cafos D160 shows similar behavior.

Time of disintegration of tablets is mostly dependent on the used fillers. Tablets containing from 20 % to 40 % Comprecel 102 disintegrated very quickly within three minutes. On the contrary, higher amount of Comprecel 102 caused prolonging of disintegration time. Decrease in the concentration of SpheroLac 100 in the compound with Di-Cafos D160 and Di-Cafos A150 caused significant prolongation of disintegration time. Tablets containing high concentrations of Di-Cafos D160 and Di-Cafos A150 did not disintegrate even after 40 minutes.