

Abstract

Charles University in Prague, Faculty of Pharmacy in Hradec Králové

Department of: Pharmaceutical technology

Consultant: Mgr. Petra Svačinová, PhD.

Student: Le Thanh Tra

Title of Thesis: Evaluation of stress relaxation of mixtures of
lactosum and calcii hydrogenphosphate
for preparation tablets with theophylline

This thesis studies viscoelastic behavior of fillers and tensile strength of tablets with theophylline. Used material are described in theoretical part: Laktosum SpheroLac 100, microcrystalline cellulose Comprcel 102, calcium hydrogenophosphate anhydrate Di-Cafos A150, calcium hydrogenophosphate dihydrate Di-Cafos D160, theophylline and magnesium stearate. Thesis also describes the stress relaxation test, methods of evaluation and it's application. Experimental part evaluates viscoelastic behavior and tensile strength through the test of stress relaxation with maximal compression force 10 kN and dwell time 180 s. The tensile strength of tablets is also evaluated.

Experimental part evaluates parameters of elasticity A_i and plasticity P_i , which were obtained from the test of stress relaxation. It evaluates effect of different fillers on these parameters. The highest values were measured at mixtures E (Spherolac 100 a Comprcel 102), further at mixtures D (Spherolac 100 a Di-Cafos A150) and the lowest parameters of elasticity and plasticity were at mixtures B (Spherolac 100 a Di-Cafos D160). The tensile strength was the highest for mixtures E and distinctly lower for mixtures B and D. The higher radial strength was for mixtures with calcium hydrogenophosphate dihydrate.