## Abstract

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Title of Thesis: The influence of dwell time on the parameters of the stress relaxation test for lactose and calcium hydrogen phosphate

The aim of this thesis is to find out viscoelastic properties of pharmaceutical excipients and to evaluate the tensile strength of tablets made of them. The theoretical part describes used materials, these are lactose, calcium hydrogen phosphate and magnesium stearate. The thesis also deals with the stress relaxation test, its evaluation and usage. Tensile strength, calculation and various factors that affect tensile strength are described in the text.

The experimental part deals with viscoelastic properties of used materials and their mixtures with lubricant using the stress relaxation test. Different dwell times (60 s, 120 s, 180 s, 240 s, 300 s, 360 s, 420 s, 480 s, 540 s, 600 s) were used for individual measurements. The relation between elasticity parameters ($A_1$, $A_2$, $A_3$) and plasticity parameters ($P_1$, $P_2$, $P_3$) depending on the dwell time was investigated. As for calcium hydrogen phosphate, the dwell time 180 - 240 seconds was found as the most appropriate. As for lactose, the optimum dwell time was determined to 300 seconds. Lubricants slightly increase the dwell time, where the biggest changes of parameters of elasticity occur. Plasticity parameters increase with increasing dwell time. Tensile strength of calcium hydrogen phosphate slightly increases with increasing dwell time, contrarily decreases at mixtures with magnesium stearate. Tensile strength of lactose is not dependent on dwell time. The same effect applies for mixtures of lactose with magnesium stearate as well.