

## Abstract

The thesis deals with the comparison of compressibility and properties of tablets containing silicified microcrystalline cellulose and physical mixtures of microcrystalline cellulose with different types of colloidal silicon dioxide. The used excipients were silicified microcrystalline cellulose Prosolv<sup>®</sup> SMCC 90, microcrystalline cellulose Avicel<sup>®</sup> PH-102 and colloidal silicon dioxide Aerosil<sup>®</sup> 200 and 255. Tablets were compressed at three compression forces 2.5, 3 and 3.5 kN. The energy profile of compression, the tensile strength of tablets and the disintegration time of tablets were evaluated. The effect of 1 % magnesium stearate on these parameters under various mixing conditions and its homogeneity in the tablet were evaluated.

Total energy of compression increased with the growing compression force, it was the highest at Prosolv<sup>®</sup> SMCC 90. Plasticity decreased with compression force, mixtures of Avicel<sup>®</sup> PH-102 with both types of Aerosil showed its the highest values. These mixtures provided tablets with lower strength than Avicel<sup>®</sup> PH-102 and Prosolv<sup>®</sup> SMCC 90. Disintegration time of tablets increased with the growing compression force and it was longer in the case of tablets from Prosolv<sup>®</sup> SMCC 90 and Avicel<sup>®</sup> PH-102. The addition of magnesium stearate decreased tensile strength of tablets most in the case of the mixture with Avicel<sup>®</sup> PH-102. The homogeneity of magnesium stearate in tableting materials didn't influence tested parameters significantly.