

# 1 Abstract

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Title of Thesis: Influence of different types and ratios of microcrystalline cellulose and lactose on physical properties of tablet blends and tablets.

In this study, the properties of tablet blends prepared from five different kinds of microcrystalline cellulose (Avicel® A-101, 102, 105, 112, 200) and three types of lactose in different proportions were evaluated. Moisture content, the bulk and tapped density and the angle of repose were compared for tablet blends. The addition of lactose to the mixtures caused the decrease in the moisture content in the tablet blends. After evaluating the flow properties, the mixtures with suitable characteristics were compacted at compression forces of 8 and 12 kN. The force required to eject the tablet, the table strength, the disintegration time and the friability of the resulting tablets were estimated. The worst compressibility was identified for mixtures with higher concentration of Avicel 105. Due to its very small and fine particles (approximately 20µm) the filling of matrix was not uniform making tablet compression unsuccessful and thus the of uniform moldings wasn't successful. In contrary, Avicel 200 showed the best flowability and compressibility properties. In general, the tablets made from Avicel itself had the maximum strength; tablet strength decreased with the addition of lactose in most cases. When comparing the strength of the tablets prepared from Avicel mixture with lactose monohydrate 80 and lactose SD in a 50:50 ratio the strength decreased in the order A-105 > A-101 > A-102 > A-200, A-112.