

Charles University, Faculty of Pharmacy in Hradci Králové

Department of: Pharmaceutical Technology
Supervisor: Assoc. Prof. Zdenka Šklubalová, Ph.D.
Consultant: Sebastien Bailey
Student: Brooke Alexandra Dunlap
Title of Thesis: **The influence of micronized poloxamer on the flow and compaction of a model tableting mixture**

Lubricants are an important excipient used in the production of tablets, they facilitate powder flow during manipulation, prevent powder sticking to the press during compression, and aid in tablet ejection. In this thesis the effect of four different concentrations 0.5, 1.0, 1.5, and 2.0 % w/w of micronized Poloxamer 188 on a model tableting mixture consisting of a 1:1 ratio of Microcrystalline Cellulose (MCC) and Lactose (L) was tested to determine its effectiveness as a lubricant for tablet manufacturing. Flow through an orifice, angle of repose, Hausner ratio, compressibility index, dynamics of consolidation, and powder bed porosity were tested. There was no increase in flowability of the powder at any concentration of P188 in any test used, all mixtures showed poor or very poor flow behaviour. Compression process was evaluated according to the force displacement method at three different compression forces (5 kN, 7 kN, 10 kN) and special attention was paid to ejection force. P188 is an effective lubricant during tablet ejection even at low concentrations decreasing the ejection force by at least a factor of 3, with minimal effect on energies of compression. Finally, tablets were tested for tensile strength, friability, and disintegration time. There was no visible negative effect on tablet properties at any concentration tested in comparison to the binary mixture of fillers. In conclusion, P188 showed no effect as a glidant, however was an effective press lubricant with no adverse effects on tablet properties.