

# Abstract

Charles University, Faculty of Pharmacy in Hradec Králové

Department of: Pharmaceutical technology

Supervisor: PharmDr. Petra Svačinová, Ph.D.

Student: Eliška Marxová

Title of Thesis: Effect of crospovidone on the properties of tablets prepared from spray-dried material

The aim of this thesis is to evaluate the effect of crospovidone on the properties of tablets prepared from spray-dried powder containing the active substance meloxicam. Crospovidone is an effective superdisintegrant, used to increase disintegration of tablets and bioavailability of poorly soluble drugs. Mixtures with 1 %, 2 %, 3 % and 4% of disintegrant were prepared from the spray-dried powders containing excipients chitosan and sodium laurylsulfate and different amount of the drug. Tablets were compressed from each mixture and the disintegration time, crushing force with radial strength, helium pycnometry with porosity, thermal characteristics (DSC) and the amount of released drug (dissolution tests) were evaluated.

The results show that tablets from SDML mixtures with crospovidone have lower tensile strength compared to formulation without disintegrant. The exception was the SDML2 4 % mixture. The porosity increased in SDML4 (2–4 %) and decreased in the other mixtures. During the disintegration tests, there was an extension of the disintegration time compared to mixtures without disintegrant, and only the SDML4 (1–3 %) mixtures met the requirements of pharmacopoeia. In the dissolution test, there was less drug released compared to meloxicam powder and mixture without crospovidone, and no direct effect of disintegrant concentration on the amount of drug release was confirmed. Differential scanning calorimetry showed no temperature changes after addition of crospovidone, and no interaction between the used starting materials is expected.