

Abstract

Charles University, Faculty of Pharmacy in Hradec Králové

Department of: Pharmaceutical Technology

Student: Dominika Čurmová

Supervisor: PharmDr. Barbora Vraníková, Ph.D.

Title of Diploma Thesis: Effect of compaction pressure on the compressibility of liquisolid powders containing Neusilin[®] US2

Preparation of the liquisolid systems seems to be very promising method for increasing bioavailability of poorly water-soluble drugs.

The aim of this thesis was to evaluate the effect of the compression force on the viscoelastic properties of liquisolid mixtures containing Neusilin[®] US2 (carrier) and macrogol 400 (solvent). The force – displacement record was employed as an evaluation method. Furthermore, the influence of the compression pressure on the parameters of the compressed tablets was determined using pharmacopoeial tests (mass uniformity, hardness, friability and disintegration time of the tablets). Moreover, the height, diameter and pycnometric density of all samples was measured.

From the obtained results it can be stated that the energy values were increasing with increasing compression force, while plasticity was decreasing. The hardness of liquisolid tablets was also increasing with increasing compression force, while the friability of the tablets decreased. The results showed that in the case of both mixtures, the lowest compression force (0.5 kN) is inappropriate for the preparation of tablets with sufficient mechanical resistance. High values of hardness were achieved for tablets prepared by 2.5 and 3.0 kN, which also fulfilled other requirements of the Czech Pharmacopoeia.