

2 ABSTRACT

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Title of Thesis: Preparation of spray-dried powder containing active substance, chitosan and surfaktant

The main of this work was to prepare spray-dried powder containing meloxicam, chitosan and CTAB as surfactant. Spray drying is a method used to increase the bioavailability of poorly soluble drugs. Surfactants are substances that increase the solubility of drugs by the mechanism of micellar solubilization. Samples with different concentrations of meloxicam and constant amount of CTAB and chitosan used as a carrier were prepared. Three different temperatures, 170 °C, 190 °C and 210 °C were used for spray drying. The effectiveness of CTAB on properties of prepared particles and on the drug release from the samples was evaluated.

The 1,4 mm diameter nozzle was used for spray drying. Optical microscopy and SEM were used to evaluate the appearance of prepared particles and the thermal characteristics were evaluated by DSC. The amount of drug released was evaluated using dissolution test.

The particles of obtained powder had an irregular plate-like shape corresponding to chitosan particles. Spherical particles of meloxicam with CTAB forming clusters were trapped on the surface. Changes in temperature and different concentrations of the drug did not affect the appearance of particles. Only the chitosan dehydration peak and the CTAB phase transition peak were observed in the DSC thermograms. The melting temperature of meloxicam and CTAB was not detected, which may indicate the change of crystalline form of meloxicam to amorphous form. The amount of drug released was significantly higher in the spray-dried samples, except of mixtures containing 10 mg of meloxicam. Most of the drug was released

after 5-15 minutes of dissolution. The best results were obtained for samples dried at 170 °C and 190 °C.