

1. ABSTRACT

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Title of Thesis:	Investigation of process parameters and their influence on spray dried particles properties.

The aim of the thesis was to determine to what extent it is possible to influence the particle size of the products by setting the parameters of the dryer. This particle size largely depends on the scale of the dryer used. Therefore, the aim was to determine whether a laboratory-scale spray dryer can either produce particles of variable size or particles of such size, that is typically obtained from production-scale devices. Particles prepared of meloxicam dispersions in hydroxypropylmethylcellulose phthalate were used for evaluation.

A variety of input parameters for spray drying (drying gas inlet temperature, stock solution flow, concentration, and spray nozzle diameter) was used to prepare several batches of the product. The methodology *Design of Experiments* was used to identify the influence of individual input parameters on the product properties (particle size, glass transition temperature, and residual solvent content).

Individual batches of the products were characterized by ^1H and ss-NMR, SEM, mDSC, and dissolution.

Batches of the product varying in particle size by approximately half order of magnitude were prepared and the effect of particle size on product dissolution rate was observed. A higher dissolution rate was observed for batches with smaller particle size.