

## DEPENDENCE OF TABLET STRENGTH ON GRANULATE PROPERTIES

Čierny M.<sup>1</sup>, Macho O.<sup>1</sup>, Gabrišová Ľ.<sup>1</sup>, Fekete R.<sup>1</sup>

<sup>1</sup>*Slovak University of Technology in Bratislava, Faculty of Mechanical Engineering, Institute of Process Engineering, Námetie Slobody 17, 812 31 Bratislava 1, Slovakia*

Granulation is a size enlargement process and plays an important role in the preparation of solid dosage forms. Active pharmaceutical ingredients such as ibuprofen and paracetamol are known for their cohesive nature and high compressibility, which causes tableting problems. By adjusting the flow properties of the primary mixtures, the required flow properties of granules can be achieved and thus ensure a problem-free tableting process. The aim of this study was to monitor the influence of the properties of the granules on the final tablet tensile strength.

Granules were produced by using three different impeller speeds, two wet massing times and different amounts of added granulation liquid (L/S ratio). A high-shear batch granulator was used to modify the flow properties of microcrystalline cellulose Avicel PH 101. The granulation liquid, a 3% aqueous solution of polyvinylpyrrolidone, was sprayed into the granulator chamber. The experiments were performed at L/S ratios of 0.66 - 1.21. Large agglomerates and fine particles were removed by sieve analysis. The granule size was determined by dynamic image analysis. The flow properties of the granules were determined using a tap density tester. Analyses were carried out to determine the flow properties, bulk density, the tap density, the Hausner ratio and Carr's compressibility index.

Three tablets were made from each granulate at a compaction force of 19.9 kN. The amount of added granulation liquid needed to form the granulate, its size and sphericity had the most significant effects on the strength of the tablets.

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