

## **Influence of Processing Parameters on the Reliability of Sieving as a Particle Size Distribution Measurements**

**Authors :** Eseldin Keleb

**Abstract :** In the pharmaceutical industry particle size distribution is an important parameter for the characterization of pharmaceutical powders. The powder flowability, reactivity and compatibility, which have a decisive impact on the final product, are determined by particle size and size distribution. Therefore, the aim of this study was to evaluate the influence of processing parameters on the particle size distribution measurements. Different Size fractions of  $\alpha$ -lactose monohydrate and 5% polyvinylpyrrolidone were prepared by wet granulation and were used for the preparation of samples. The influence of sieve load (50, 100, 150, 200, 250, 300, and 350 g), processing time (5, 10, and 15 min), sample size ratios (high percentage of small and large particles), type of disturbances (vibration and shaking) and process reproducibility have been investigated. Results obtained showed that a sieve load of 50 g produce the best separation, a further increase in sample weight resulted in incomplete separation even after the extension of the processing time for 15 min. Performing sieving using vibration was rapider and more efficient than shaking. Meanwhile between day reproducibility showed that particle size distribution measurements are reproducible. However, for samples containing 70% fines or 70% large particles, which processed at optimized parameters, the incomplete separation was always observed. These results indicated that sieving reliability is highly influenced by the particle size distribution of the sample and care must be taken for samples with particle size distribution skewness.

**Keywords :** sieving, reliability, particle size distribution, processing parameters

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