148. CONTROLLING DROPLET SIZE AND SPRAY DURATION IN SOFT MIST INHALERS

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Summary: Soft Mist Inhalers (SMIs) produce a propellant-free spray for drug delivery to the lung. The size and duration of the spray is of utmost importance in order to guarantee an effective deposition of the drug. In addition to existing work, based on simulations, we present experimental evidence of how the droplet size and spray duration can be controlled by manipulating the nozzle's design parameters. The Softhaler® SMIs with different nozzles with impingement angles or different exit channel widths were used. The liquid was a placebo solution with pH 2.7. An increasing droplet size for increasing impingement angle was observed. Dv50 values ranged from (4.08 ± 0.08) μm at 75° to (4.79 ± 0.06) μm at 105°. Additionally, it was shown that changing the width of the exit channels from 8 μm to 5.6 μm increased the spray duration from (1.46 ± 0.04) s to (2.06 ± 0.06) s, with only little effect on the droplet size. These results illustrate the

ability to control droplet sizes and spray duration in SMIs. This will assist to match the requirement of a certain application.