



The Medicator[®] Aerosol Maximizer[™] in the Peer-Reviewed Literature

1. "The use of a nebulizer reservoir with air produced a 31.8% increase in the fine droplet dose delivered to the lungs. This increased delivery was the result of conserving drug dose that would have otherwise been lost to the atmosphere between breaths or expelled by exhalation. The amount of aerosol conserved and then delivered using the reservoir was in excess of the dose lost within the device itself. All reservoirs must be evaluated on an individual basis in this regard. The Medicator device demonstrated low levels of internal deposition ($8.1 \pm 1.7\%$ of the loaded dose when driven with air and $4.3 \pm 0.5\%$ with heliox).

"The additional dose per breath provided by these devices would potentially increase the effectiveness of medications needed for quick administration (such as bronchodilators for asthma). The increase in deposition and decrease in exhalational losses also implies that they would allow for more efficient administration of expensive medications."

Corcoran TE, Shortall BP, Kim IK, Meza MP and Chigier N. Department of Medicine, University of Pittsburgh; Department of Mechanical Engineering, Carnegie Mellon University; Departments of Pediatrics and Radiology, Childrens Hospital of Pittsburgh. **Aerosol Drug Delivery Using Heliox and Nebulizer Reservoirs: Results from an MRI-Based Pediatric Model** *J. Aerosol Med.* 2003; 16: 263-271.

2. "We chose to use these two nebulizer/compressor systems (Pari LC Plus and Healthline Medicator) because they produced aerosols with significantly different particle size characteristics ... These differences made it possible to compare the effect of targeting the airway with a fine-particle aerosol (Healthline Medicator) vs an aerosol with larger particles (Pari LC Plus)."

"The average MMAD for the Pari nebulizer (n=3) was 3.68 ± 0.04 microns. This MMAD was significantly larger than that of the Medicator nebulizer (n=4), which averaged 1.01 ± 0.2 micrometers ($p = 0.034$). These results indicate that 50% of the aerosol particles generated by the Pari nebulizer were <3.68 micrometers. For the Medicator nebulizer, 50% of the particles were <1.01 micrometers."

"Results from our study suggest that targeted delivery of aerosol to the larger, central airways vs the smaller, peripheral airways of adult CF patients may best be achieved by inhaling fine droplets (MMAD approximately 1.0 micrometers) at approximately 38 L/min and approximately 18 L/min peak inspiratory flow rates, respectively."

Laube BL, Jashnani R, Dalby RN and Zeitlin PL. The Johns Hopkins Medical Institutions and the University of Maryland, Baltimore, MD. **Targeting Aerosol Deposition in Patients with Cystic Fibrosis: Effects of Alterations in Particle Size and Inspiratory Flow Rate** *Chest.* 2000; 118: 1069-1076.

3. "... We chose to deliver aerosol with the Medicator device for several reasons. First, it generated an aerosol that was comprised of small particles. In addition to its capability of generating an aerosol comprised of small particles, we chose the Medicator device over other aerosol generators because it had the capability of delivering the entire dose in less than 5 minutes, thereby enhancing patient compliance."

"Third, aerosol generated during the exhalation phase of breathing was captured in a reservoir bag and was not lost to the atmosphere during exhalation."

Laube BL, Benedict GW and Dobs AS. The Johns Hopkins University School of Hygiene & Public Health and University School of Medicine, Division of Endocrinology, Baltimore, MD. **Time to Peak Insulin Level, Relative Bioavailability, and Effect of Site of Deposition of Nebulized Insulin in Patients with Noninsulin-Dependent Diabetes Mellitus** *J. Aerosol Med.* 1998; 11: 153-173.

4. "Theoretically, the most efficient nebulizer is a breath-actuated 'dosimeter' that generates aerosol and makes it available only during inspiration."

"If a dosimetric nebulizer is defined as one that releases aerosol only during inhalation, the recently marketed Medicator models from Healthline Medical are dosimetric. The Medicator employs a reservoir bag, 1-way [valve], and can add an exhalation filter."

Rau JL. Georgia State University, Atlanta GA. **The Inhalation of Drugs: Advantages and Problems.** *Respir Care* 2005;50:367-382.