# Combining Inhalation by A Breath Actuated Nebulizer With Exhalation Through An Oscillating **Positive Expiratory Pressure Device Offers The Potential For Optimal Combined Therapy**

## RATIONALE

- Oscillating Positive Expiratory Pressure (OPEP) therapy, when combined with nebulized drug delivery or hypertonic saline, offers the potential to reduce combined treatment time.
- Aerosol deposition scintigraphy was undertaken to assess in vivo pulmonary deposition from an **AEROECLIPSE**\*II Breath Actuated Nebulizer (BAN) coupled to an *Aerobika*\* OPEP device, compared to deposition from the nebulizer alone.

#### METHODS

- Eight healthy subjects received albuterol (2.5 mg/3 mL) admixed with 2 mCi of Tc-DTPA (Technetium-99m bound to diethylenetriaminepentaacetic acid) administered using the BAN alone and again when the BAN was combined with the OPEP device.
- Regional doses were then determined from anterior and posterior gamma camera images collected after delivery.
- Lung perimeters were defined using Cobalt-57 transmission scans and applied to Tc-DTPA deposition images. Results were expressed as a percentage of baseline counts.



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**AEROECLIPSE**\* Breath Actuated Nebulizer



Aerobika\* OPEP Device



Combination Aerobika\* OPEP Device + **AEROECLIPSE**\* BAN

### RESULTS

- Average age of all 8 subjects (4 male, 4 female) was 33 years.
- Whole lung deposition was, on average,  $31 \pm 13$ vs  $32 \pm 13\%$  of loaded dose for BAN alone and BAN+OPEP device respectively.

#### Percentage of Loaded Dose (%)

Location	<b>BAN Alone</b>	<b>BAN+OPEP</b> device
Mouth	$1.1 \pm 0.8$	$0.8 \pm 06$
Throat	$3.0 \pm 1.3$	$3.4 \pm 1.6$
Lungs	31.0±12.7	32.0±12.8
Left	$14.9 \pm 6.7$	$15.0 \pm 6.8$
Right	$16.1 \pm 6.3$	$17.0 \pm 6.4$
Stomach	$6.3 \pm 5.7$	$5.5 \pm 4.1$

# CONCLUSIONS





• The delivery of medication from the **AEROECLIPSE\* II BAN to the lungs was not significantly affected by the incorporation of the Aerobika\* OPEP device.** 

• This combined aerosol and OPEP therapy could offer the clinician the opportunity to reduce treatment times in those patients who currently do both nebulizer and OPEP or airway clearance therapies separately (i.e. patients with cystic fibrosis).

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