

## Improved pulmonary resistance in healthy sheep following Targeted lung denervation (TLD)

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**Introduction:** Targeted lung denervation (TLD) is a bronchoscopic procedure developed to relieve obstructive airways disease by disrupting pulmonary parasympathetic inputs to the lung. A denervation system and novel radiofrequency ablation catheter with dual cooled design was developed to facilitate ablation of bronchial branches of the vagal trunk while minimizing airway wall effects.

**Aim:** To determine the effect of lung denervation on pulmonary resistance in healthy sheep.

**Methods:** Following IACUC approval, 3 sheep underwent circumferential ablation of both main bronchi using a lung denervation system (Nuvaira, Inc., USA). All sheep were mixed breed and weighed 47-51 Kg. Prior to and following TLD therapy, each animal underwent a series of pulmonary resistance measurements using a custom built forced oscillometry system. Atropine was utilized as a positive control to demonstrate bronchodilation prior to TLD.

**Results:** The effect of TLD therapy was evident in all three animals. On average, the airway resistance decreased by 27% (1.34 cmH<sub>2</sub>O/(L/s)) and 30% (1.28 cmH<sub>2</sub>O/(L/s)) in response to the peak effect of atropine and post-TLD therapy, respectively. The effect from TLD was maintained at 90 min post treatment while the effect of atropine resolved over the same time frame.

**Conclusions:** Healthy sheep subjected to TLD demonstrated decreased airway resistance comparable to the peak effect of atropine.

