Whole Body Plethysmograph

Plethysmography for conscious unrestrained animals

MEASUREMENTS

» Respiratory rates & durations
» Flow & volume changes
» Quantifies the index of bronchoconstriction (penH)

FEATURES & BENEFITS

» For conscious and freely moving mice, rats and guinea pigs
» Larger plethysmographs on request (rabbit, ferret, dog, pig, primate)
» Non-invasive measurements for longitudinal studies
» No surgery - monitor the same animal day after day
» Long term monitoring of pulmonary function
» Ease of use: start an experiment on multiple animals in minutes
» Efficient screening
» Low noise pneumotachographs to reduce external artefacts
» Regulated ventilation for noise-free air renewal

SYSTEM CONFIGURATIONS & OPTIONS

» Temperature & humidity correction
» Acclimation tool
» Chamber for neonates
» Apnea & cough/sneeze detection
» Adapted plethysmograph for behavior & EEG studies in rats
» Possible combination with implanted telemetry for cardiorespiratory studies (ECG, blood pressure)
» Swivel/tether system, for simultaneous measurement of additional physiological parameters (BP, ECG, SPO2...) or blood sampling following drug injections
» Controlled & automated aerosol delivery
» Controlled atmosphere (hyperoxia, hypoxia, hypercapnia)
**AEROSOL DELIVERY**

nebulizationCONTROLLER is used in conjunction with the nebulization head (Aeroneb® Lab Nebulizer from Aerogen Inc) to generate a low-velocity fine-droplet aerosol.

- Each nebulizationCONTROLLER drives up to 4 nebulization heads
- Multiple nebulizationCONTROLLER can be linked to drive more than 4 nebulization heads

**Adjustable aerosol generation rate** (5 % to 100 % of the maximum quantity):

- Prevents cannulae obstruction or increase of particule sizes

**Continuous nebulization or only during inspiration:**

- Avoid aerosol accumulation inside tubing when the animal is not inspiring (especially useful for anesthetized mice)

**Sequential or simultaneous delivery of aerosol in several plethysmographs**

**EXPOSURE TO GAS MIXTURE WITH MASS FLOW CONTROLLER**

- Evaluate the effect of hypoxia, hyperoxia and hypercapnia.
- Up to 3 gases can be controlled (e.g. \( \text{O}_2 + \text{N}_2 + \text{CO}_2 \) or air + \( \text{CO}_2 \))
- Full automation possible through iox2 protocols

**DATA ACQUISITION & ANALYSIS**

- iox software: Data recording, real-time analysis & display, synchronized video recording, nebulization remote control with large variety of nebulization protocols
- datanalyst software: Data post-processing
- GLP compliance: access control, audit-trail, electronic signature