Nebulizer Aerosol Generator

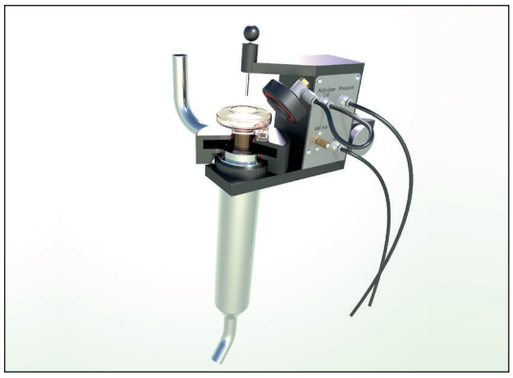
Art. No.: PIAEneb1

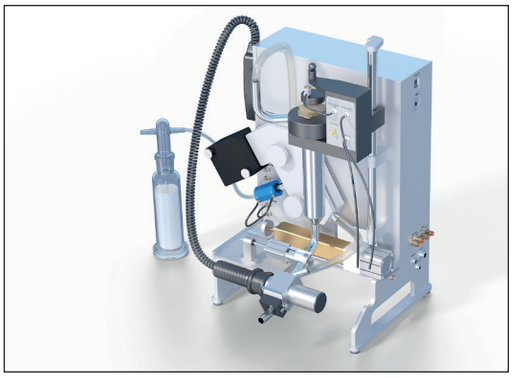
Inhalation Sciences

Applications

When the Nebulizer Aerosol Generator is mounted to PreciseInhale, dry powder-like aerosols can be generated from liquid solutions, preferably from ≥ 1% water soluble starting material. This aerosol can be exposed to either Rat Intratracheal Exposure Module or Rat Nose-Only Exposure Module.

The solution is aerosolized by a modified and integrated nebulizer unit (Aeroneb Pro) and then dried “on the fly” within the holding chamber to a respirable particle size.



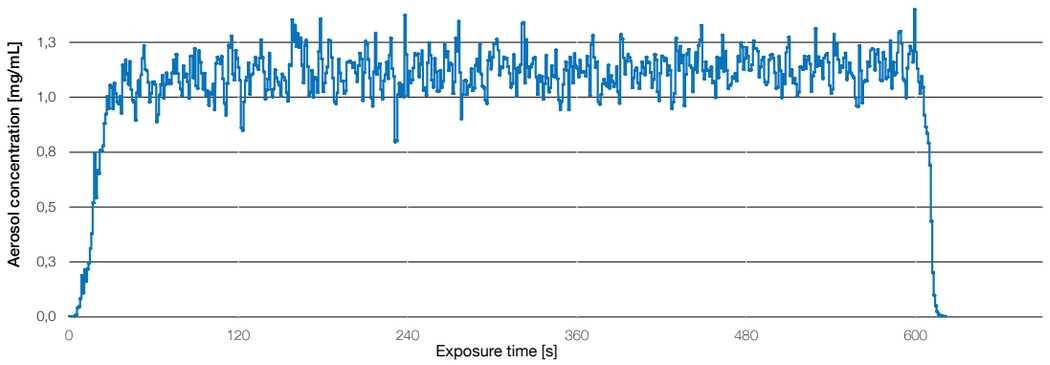


Features

- Liquids solutions as starting material
- Real-time and in-line drying
- Optional to deliver either wet or dry-powder-like aerosol from liquid solution starting material
- Monitoring of aerosol concentration during exposure

Benefits

- Dry powder-like aerosol generation of hygroscopic materials or non-micronized powders
- No need of spray drying the material before aerosolization
- Repetitive dose delivery



Aerosol concentration curve of a ”dry powder-like” aerosol generated by the nebulizer aerosol generator over 10 minutes.

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Technical specifications

Components	Nebulizer Holder Assembly (PINEBha1)
	Nebulizer Aerosol Holding Chamber (PINEBhc1)
	Nebulizer Unit (PINEBu1)
	Nebulizer Unit Support (PINEBus1)
	Nebulizer Vacuum Lid (PINEBvl1)
	Nebulizer Holding Chamber Lid (PINEBhcl1)
	Nebulizer Control Module Holder (PINEBcmh1)
	Nebulizer Control Module (PINEBcm1)
	Nebulizer Power Cable (PINEBpow1)
	Nebulizer Control Module Cable (PINEBcmc1)
	Cascade Impactor Metal inserts, 8pcs (PICps1-8x8)
	Nebulizer Air Diffuser (PINEBad1)
	Air Inlet Tube (PINEBait1)
	Air Dryer (glass flask), 2 pcs (PINEBadgf1)
Weight	3 kg
Verified exposure modules	Aerosol Characterization Module
	Intratracheal Rat Module
	Nose-Only Rat Module
Suitable materials	Aqueous solutions
	Do not use suspensions
Target molecules	≥ 1% Water soluble small molecules
Neb dosing range	0.1-10
Exposure time	≤ 600 s
Exposure flow rate	≤ 500 mL/min
Drying paper inserts	Disposable, exchange before each new exposure
Dose linearity (neb dosing)	R^2 > 0.98 (0.5 - 5.0 neb dosing) (verified through intra- and inter neb unit tests) 8% (w/w) NaCl solution (H_2O) (30-600 s)
Dose linearity (exposure time)	R^2 > 0.99 (30 - 600 s) (verified through intra- and inter neb unit tests) 8% (w/w) NaCl solution (H_2O), neb dosing 1.0
MMAD (mass median aerodynamic diameter) dependency of neb dosing	Not significant, p = 0.35 (p > 0.05) **Neb dosing 2 and 10**, imipramine 4% 0.1 X PBS solution, exposure time 300 s, exposure flow rate 440 mL/min
MMAD (mass median aerodynamic diameter) dependency of exposure time	Not significant, p = 0.36 (p > 0.05) **Exposure time 130, 180 and 300 s**, imipramine 4% 0.1 X PBS solution, neb dosing 10, exposure flow rate 170 mL/min
Consumables	Drying Paper Inserts, 11x15 cm, packed with silica gel. 10 pcs or 100 pcs/pack (PICNdphc10 or PICNdphc100) Air Dryer Silica Gel, portion-packed, 10 pcs/pack (PICNsgx10)

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