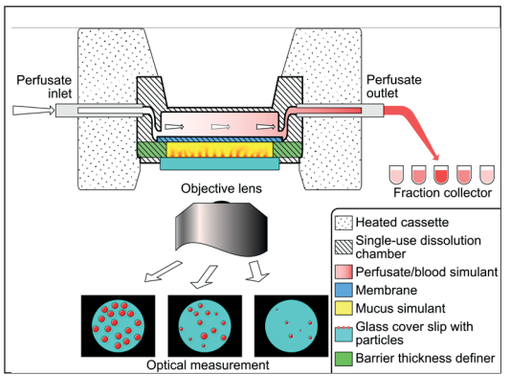
Dissolv*it*® Dissolution Module

Art. No PIEMds1

Inhalation Sciences

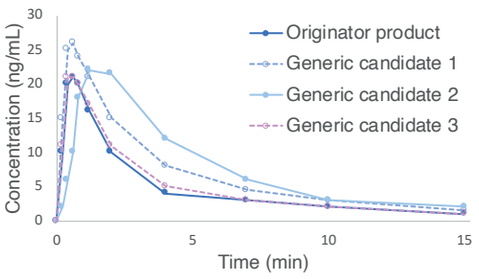
Applications

The Dissolv*it*® Dissolution Module simulates *in vitro* the dissolution and absorption of aerosol particles in the lungs. Dissolv*it*® offers the possibility to rank test substances against each other as well as to compare pharmacokinetic profiles of drug candidates with a reference product.



Features

- Evenly deposited particles over test surface
- Small amount substance/test surface (50 ng – 1 µg/cm^2)
- Dynamic system – no recirculation or stirring beaker
- Solubility ranking tool
- Experiments followed in a microscope



Dissolv*it*® dissolution profiles of three generic candidates versus the originator product.

Benefits

- More lung-like physiology simulated during the dissolution experiment
- Controlled particle – particle interferences during dissolution
- Generate pharmacokinetic profiles
  - absorption curves, including C_{max} and T_{max}
  - normalized pharmacokinetic profiles
  - retention curves
- Possibility to rank test substances against each other
- Possibility to compare pharmacokinetic profiles of drug candidates with a reference product
- Visualization of dissolution as disappearance of particles
- Knowledge about particle behaviour such as hygroscopicity

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Technical specifications

Components:	Glass Deposition Assembly (PIDSgda1)
	Dissolv*it* Assembly (PIDSass1)
	Perfusate Pump Module (PIDSpm1)
	Fraction Collector (PIFC1)
	Inverted Microscope (PIDSim1)
	Helium Degassing Kit (PIDShdk1)
	Dissolv*it* Control Module (PIDScm1)
	Computer (PIDSpc1)
Measurements:	
Total freight weight	50 kg
Total rectangular space	160 x 65 cm in which to fit:
Inverted Microscope and Dissolv*it* Assembly	30 x 50 x 45 cm (W x D x H)
Fraction Collector	50 x 43 x 38 cm (W x D x H)
Control Module	42 x 19 x 21 cm (W x D x H)
Computer	40 x 27 x 3 cm (W x D x H)
Verified Generation Modules:	Dry powder aerosol generator
	Inhaler aerosol generator
Suitable materials:	Micronized dry powders
	Dry powder inhalers (DPIs)
	Pressurized metered dose inhalers (pMDIs/MDIs)
	Air pollution particles including nanoparticles
Technical details:	
Number of glass cover slips	9 pcs/aerosol generation
Aerosol deposition flow rate	100 – 2000 mL/min
Recommended dose	50 – 1000 ng/glass cover slip, i.e. 53 – 1053 ng/cm^2
Deposited dose variation	RSD < 10% (n=3-9), for doses of 50-1000 ng/cover slip
Temperature	37 ± 1 °C
Perfusate rate	0.42 mL/min (RSD < 3%, n=4)
Drain rate	1.5 mL/min (RSD < 3%, n=4)
Perfusate composition	Phosphate buffer including 4% bovine serum albumin
Experimental length	Up to 8 h
Mucus simulant volume	5.7 µl
Number of sampling fractions	Up to 64/experiment
Sampling time	5 s – 4 min
Sample volume	35 µL – 1.68 mL
Sample analysis	LC-MS/MS analysis, LLOQ down to 100 pg/mL
Microscope magnification	10X and 20X
Consumables:	Dissolv*it* Glass Cover Slips (PIDSgcsx500)
	Dissolv*it* Antistatic Glass Storage Box (PIDSagsb1)
	Dissolv*it* Glass Deposition Filters 60 mm x 100 (PICDgdfx100)
	Dissolv*it* Glass Storage kit (PICDgskx100)
	Mucus Simulant (PICDms1.5)
	Dissolv*it* Mucus Pipette Tips x 96 (PICmptx96)
	Dissolv*it* Dissolution Chambers (PICDdcx12)
	Dissolv*it* Tubing Package (PICDtkx5)

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