NextBreathLLC

Breathing New Life into your Pulmonary and Nasal Delivery Projects

Nasal Spray Bioequivalence – In Vitro Test Study Plan

Next Breath is a full service cGMP compliant laboratory for analytical testing of nasal spray drug products to support your ANDA submission. Using the study design below for a model suspension nasal spray product, Next Breath will customize a program to meet your requirements, conduct the relevant experiments according to the Draft Guidance for Industry: Bioavailability and Bioequivalence of Nasal Aerosols and Nasal Sprays for Local Action, interpret the test results and generate a report suitable for inclusion in your regulatory submission.

In Vitro Test	Test Parameters	Unit Life	Test Metric(s)	Equipment	Objective(s)
Single Actuation Content Through Container Life	Collect emitted dose from unprimed units in a vertical orientation	Beginning End	Mass of Drug per Actuation, Shot Weight	Unit Dose Collection Tubes HPLC for Drug Assay NSx Actuation Station MightyRunt Actuation Station Analytical Balance	1. Quantify emitted dose from single actuations through unit life. 2. Confirm number of priming shots.
Droplet Sizing by Laser Diffraction	Measure droplet size distribution at two heights between the nasal spray tip and laser beam	Beginning End	D10, D50, D90 Span % less than 9um Shot Weight	Malvern Spraytec Extraction Fan NSx-MSActuation Station MightyRunt Actuation Station Analytical Balance	1. Quantify particle size distribution from the fully developed phase of the plume based on percent transmission (%T)
Drug in Small Droplets by Cascade Impaction	Collect no more than 10 actuations per run into an Andersen Cascade Impactor operated at 28.3 lpm. A 2 liter nasal induction port and preseparator will be used with the Impactor.	Beginning	Mass of Drug Less than 9 um, Mass Balance, Shot Weight per per 10 actuations	Andersen Cascade Impactor 2L Glass Nasal Induction Port Preseparator Mass Flow Meter Vacuum Pump NSx Actuation Station MightyRunt Actuation Station Analytical Balance	1. Quantify the amount of drug present in fine droplets to predict possible lung deposition.
Microscopy	For suspension products, quantitatively (or qualitatively) measure suspended particle size	Beginning	Particle Size Distribution	Light Microscope	1. Quantify the particle size distribution of primary drug particles and agglomerates
Spray Pattern	Imaging the shape of emitted spray by non-impaction based analysis. Perform testing at two heights between the nasal spray tip and laser sheet	Beginning	Dmax Dmin Ovality Ratio Center of Gravity Shot Weight	SprayVIEW NSP Software NSx Actuation Station Analytical Balance	1. Characterize and quantify the shape of the emitted spray plume
Plume Geometry	Imaging the shape of emitted spray by laser sheet analysis from a single time that represents a fully developed plume	Beginning	Plume Width Plume Height Spray Angle Shot Weight	SprayVIEW NSP Software NSx Actuation Station Analytical Balance	1. Characterize and quantify the shape of the emitted spray plume from a side view
Priming and Repriming from Vertical Storage Orientation	Priming will be evaluated during single actuation content testing described above. After priming, each pump will be stored in a vertical orientation. Repriming actuations collected according to the reference product package insert.	Beginning	Mass of Drug per Actuation, Shot Weight	Unit Dose Collection Tubes HPLC for Drug Assay NSx Actuation Station MightyRunt Actuation Station Analytical Balance	1. Determine if the test product meets the repriming guidelines from the reference product package insert
Priming and Repriming from Horizontal Storage Orientation	If not performed as part of CMC study, repeat priming and repriming studies as described above for vertical storage orientations	Beginning	Mass of Drug per Actuation, Shot Weight	Unit Dose Collection Tubes HPLC for Drug Assay NSx Actuation Station MightyRunt Actuation Station Analytical Balance	1. Quantify emitted dose from single actuations 2. Confirm number of priming shots.

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Need Nasal and Inhalation Testing and Formulation Development?

Let's talk...

Next Breath is a GLP/GMP laboratory for nasal and aerosol analytical testing throughout the drug development life cycle. With extensive experience in optimizing drug formulations to produce the desired drug characteristics, we help you advance new inhalation and nasal products quickly into clinical trials and provide services in support of regulatory submissions. Our unique business model enables pharmaceutical, biotech and medical device companies to interact directly with our expert scientists - from protocol development to the final reports.

Nasal and Pulmonary Test Services

- Breath Simulation (for Nebulizers, DPIs and Spacers / Valved Holding Chambers)
- CMC Characterization Studies
- Batch Release and Stability Testing
- Bioequivalency Testing
- Device Robustness / Ruggedness (all device types)
- Component Release Testing

Device Types

- Soft Mist Inhalers
- Metered Dose Inhalers
- Dry Powder Inhalers
- Nasal Sprays
- Jet, Vibrating Membrane and Ultrasonic Nebulizers
- Nasal Nebulizers
- Spacers / Valved Holding Chambers
- Auxiliary Equipment (compressors, or mouthpiece configurations, etc.)

Let's talk. Contact Next Breath at (1)410-455-5904 or visit us online at www.nextbreath.net.

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