IN-USE STABILITY OF ACLIDINIUM BROMIDE 400 μG /
FORMOTEROL FUMARATE DIHYDRATE 12 μG
INHALATION POWDER IN A DRY POWDER INHALER

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Three stability studies simulating patient use were performed on aclidinium bromide 400 μg/formoterol fumarate dihydrate 12 μg inhalation powder in the Genuair™ inhaler.

Samples of a development batch representative for commercial production were tested after corresponding pre-storage for 12, 22, and 35 months over an in-use period of 10 weeks, at climatic zone II and IVb conditions.
Abstract P291 Figure 1  Delivered dose (DD) and fine particle dose (FPD) over in-use period of aclidinium bromide and formoterol fumarate dehydrate in μg (RH: relative humidity)
At day 0 and appropriate time intervals until the final dose was dispensed and the lock-out mechanism of the inhaler was activated, the following parameters were assessed: water content, degradation products, content per cartridge, delivered dose (DD), fine particle dose (FDP) and microbial growth. All results, notably DD and FPD (Figure 1), were within the expected range and well inside the specifications applied during development. More precisely, the mean results of DD for aclidinium bromide were between 370 μg and 451 μg (specification 320–480 μg) and for FPD between 139 μg and 182 μg (specification ≥80μg), while the mean values of DD for formoterol fumarate dihydrate were between 10.1 μg and 13.1 μg (specification 9.6–14.4 μg) and for FPD between 2.5 μg and 3.7 μg (specification ≥1.8 μg).

The studies show that stable pharmaceutical quality can be guaranteed under in-use conditions for a period longer than the allowed 60 days after unpacking the drug product pre-stored even up to the end of shelf life.

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Introduction Recovery from COPD exacerbation is associated with increases in respirable lung volume. Accelerating these changes through improved bronchodilator delivery could hasten recovery.

Hypothesis Vibrating mesh nebuliser (Aerogen® Ultra) results in greater change in lung physiology compared to standard small volume jet nebuliser.

Methods Patients with an exacerbation of COPD were randomised to receive combined salbutamol 2.5 mg/iratropium bromide 0.5mg via vibrating mesh (Active group) or standard hospital jet nebuliser (Control) on one occasion between day 2–7 of hospitalisation. Spirometry, body plethysmography and impulse oscillometry were performed pre-bronchodilator and at 1 hour post. Borg breathlessness score was measured.

Results Thirty-one patients have been recruited to date, 16 to the active group and 15 control group. Mean FEV1, was 48 ± 18% predicted. Baseline demographics were comparable between active group and 15 control group. Mean FEV1 was 48 ± 18% predicted. Baseline demographics were comparable between active group and 15 control group. Mean FEV 1 was 48 ± 18%

Conclusion Bronchodilator administration, during a COPD exacerbation, results in significant improvements in spirometry, lung volume and airway impedance. Drug delivery by vibrating mesh nebuliser results in greater absolute increases in FVC. Further studies will assess whether this translates into accelerated exacerbation recovery.

Introduction To assure consistency of clinical outcomes, orally inhaled products must have consistent in vitro delivered dose and aerosol properties. Achieving this consistency has been challenging with MDIs, particularly those that combine multiple drugs. Co-Suspension™ delivery technology has been developed for in vitro drug-drug interaction-free delivery of multiple drugs from fixed-dose MDI combinations. This versatile technology suspends the micronised drugs with spray-dried phospholipid porous particles in hydrofluoroalkane propellant. The objective of this study was to determine whether BGF MDI, the triple Co-Suspension delivery technology formulation of BD/GP/FF, displays in vitro drug delivery comparable to its constituent single and dual drug formulations.

Methods Single, dual and triple therapy MDIs of BD, GP and FF were prepared by suspending each drug’s microcrystals with phospholipid porous particles in HFA propellant. In vitro drug delivery was assessed by comparing delivered dose uniformity and aerodynamic particle size distribution.

Results BD, GP and FF formed stable suspensions in the presence of phospholipid porous particles, despite differences in drug physicochemical properties and doses. A consistent and comparable delivered dose and aerodynamic particle size distribution was observed whether emitted from a single, dual or triple therapy MDI.

Conclusion The single, dual and triple drug MDI formulations demonstrated comparable aerosol characteristics which should enable patients to transition across the continuum of these MDI therapies without in vitro drug-drug interaction impacting drug delivery and clinical outcomes.

Rationale The once-daily combination of tiotropium (T), a long-acting muscarinic antagonist, and olodaterol (O), a long-acting β2-agonist, has demonstrated efficacy and safety in COPD. Two large clinical studies (TONADO®1 + 2) have also demonstrated the benefits of T/O compared to the monocomponents in patients with moderate to very severe COPD. This post hoc analysis investigated whether T/O is more effective than T at delaying