Drug Delivery Evaluation of a New Valved Holding Chamber (VHC) Designed Specifically for On-The-Go Use.

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Purpose

- This laboratory study evaluated the medication delivery performance when using a LABA (Formoterol) containing combination MDI with and without a new portable VHC (***AeroChamber2go****, A2Go).

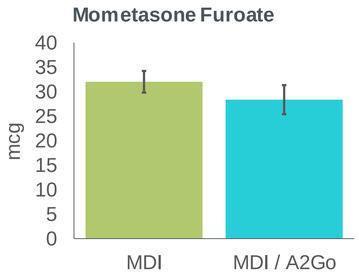
Methods

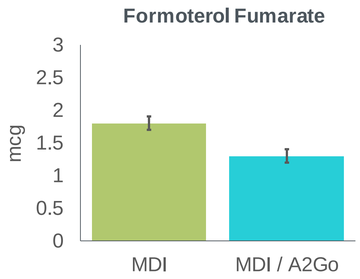
- The emitted dose was sampled at 28.3 L/min from an abbreviated Andersen cascade impactor.
- Five actuations of mometasone furoate/ formoterol fumarate (MF/FF 100/5µg /actuation; Zenhale†) were delivered at 30s intervals and the VHC was used directly from it's packaging without pre-washing to mitigate charging.
- Inhalation 0s after MDI actuation simulated perfect, but unlikely, coordination with the MDI alone.
- A more realistic 2s delay was investigated for the MDI/VHC system.
- MF/FF was subsequently recovered and assayed by HPLC-UV spectrophotometry.

Results

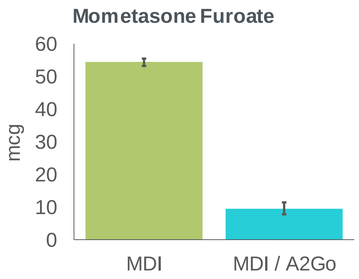
- Fine particle mass (FPM) was defined as the mass of MF/FF <4.7µm per actuation and large particle mass (LPM) was defined as the mass of MF/FF>4.7µm per actuation. Both the MDI alone and MDI+A2Go delivered similar amount of FPM. However, the MDI alone delivered significantly more LPM than the MDI+A2Go.

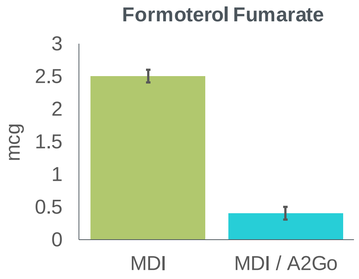
FPM





LPM





Conclusion

- The new portable VHC with a simulated 2s delay delivered similar amounts of fine particle medication (sized to be delivered to the lungs) as the MDI alone, even when the MDI was tested using simulated 'perfect' coordination.
- In addition, the large particles that could be deposited in the oropharynx were reduced by a greater than five times factor when using the A2Go compared to the MDI alone.
- The new portable VHC would appear to provide a patient friendly and adherence favouring option for assured MDI drug delivery 'on the go'.

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