Inhaled Cationic Airway Lining Modulator (iCALM) attenuates allergen-induced eosinophilic bronchitis

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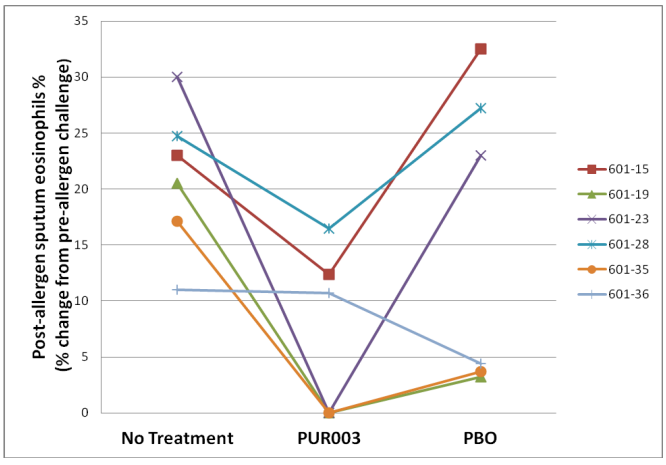
Rationale: iCALM is a cationic aerosol therapy comprised of 1.29% calcium chloride dissolved in 0.9% isotonic saline that enhances the biophysical barrier function of the airway lining fluid and primes the host defense response. We hypothesized that it would be able to attenuate bronchitis caused by inhaled particles and investigated this using an allergen-inhalation model in a proof-of-concept study.

Objectives: To examine the safety and efficacy of iCALM to attenuate allergen-induced eosinophilic bronchitis in mild atopic asthmatic subjects.

Methods: In a randomized, double-blind, cross-over trial, 6 mild atopic steroid-naïve asthmatic subjects inhaled iCALM or matching placebo (isotonic saline) for 3 BID doses before a whole lung allergen inhalation challenge to an antigen identified by skin prick test. FEV_1 was monitored for 7 hours and sputum was induced with hypertonic saline at the end of 7 hours. The percentage of eosinophils was identified using Wright's stain on a DTT-dispersed sample separated from saliva.

Results: iCALM was well tolerated by all subjects. The mean change in FEV_1 at 1h and 2h after iCALM inhalation were -0.6% and +1.3% respectively compared to -0.9% and +1.0% respectively after placebo inhalation. Allergen-induced percent sputum eosinophilia was significantly less after iCALM compared to placebo (See figure: Mean difference -9.1%; 95% CI [-18.2, -0.2]). Since airway responses were not a pre-defined outcome measure and since baseline responses were quite heterogeneous (5/6 had an early response and 2/6 had a late response), no conclusion can be drawn on the effect on iCALM on EAR or LAR.



Conclusion: iCALM solution does not cause bronchoconstriction and attenuates allergen-induced eosinophilic bronchitis, suggesting that this may be an effective strategy to protect against bronchitis caused by inhaled particles.

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