**Introduction**

The major cause of indoor perennial allergenic disorders, particularly asthma, allergic rhinitis, and atopic dermatitis, is allergic to house dust mites (HDM). These conditions affect up to 25% of the US population. Treatment modalities have included intense efforts to avoid mites, immunotherapy and others with limited success, invoking the need for more rigorous clinical studies. There are many barriers to the creation of novel or novel therapies for HDM. Recent studies have demonstrated that in the developing world, children living with severe clinical allergies have high exposure to allergens and none to allergen avoidance measures. The current challenge for allergy (AAC) is to develop specific, sensitive and reproducible methods for clinical testing, that can be administered safely and efficiently to the pediatric population. Most of these studies, including ours, have focused on pollen exposures. 6. These studies highlight the utility of using AACs as a physiologically relevant model to monitor individual responses. Highlighting this, a recent NIH workshop accepted the AAC as a potential tool for proving the effects of novel products for allergen immunotherapy. 6. However, there are only a few studies that have used AAC for elicitation of symptoms following challenge with HDM, partly due to the difficulty of the delivery of HDM and the low reproducibility.

**Methods**

- Participants of both genders, 10 to 79 years were enrolled, classified as HDM-positive or HDM-negative according to the positive or negative response, respectively, to skin prick test (SPT) to D. pteronyssinus (C. p. mite). There were no differences between HDM+ and HDM-participants by age, gender, and ethnicity.
- The study comprised 4 consecutive phases (Figure 2A): (i) a run-in phase in the natural setting comprising 4 days prior to first series of HDM challenges in the AAC; (ii) AAC challenge phase comprising 3 days, with each four consecutive days (exposures 1 to 4) to a mite, purified mite body powder of Dermatophagoides pteronyssinus; (iii) Ovation phase in the natural setting of 36 days prior to AAC-Ch; and (iv) AAC-challenge phase to HDM using identical conditions as those employed for AAC-Ch with both HDM+ and HDM-participants completed all 4 phases.
- Total symptom scores (TSS, 0–3), were monitored at baseline and at 30 minutes intervals during AAC-Ch and AAC-Ch-TSS was also recorded in the morning and evening during the run-in and exposure phases. Nasal and ocular symptom scores, and body weight, temperature, and rashy nose andocular symptoms improved, itching, tearing, and redness. Nasal and ocular symptom scores were monitored on a scale (1–5) at 4, 24, and 48 hours.
- Airborne samples were collected from 5 stations at 10 minutes at hourly intervals through a 2-month period and the results of these data are shown. An aerosol cassette sampled for microscopical evaluation of mite particles.

**Results**

- The table below shows the distribution of HDM powders in the table.
- The figure below shows the responsiveness to HDM exposure in AAC-
- The table below shows the concentration of HDM antigens collected from Table 1: Distribution of HDM powder in AAC-1

**References**