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Abstract #29023

Rationale: We developed a powerful airborne allergen-sampling device for people with allergic asthma or rhinitis to easily operate in their own homes. Current standards rely on concentrations in settled dust as surrogates for inhalable allergens. We established reference levels based on median values of allergens from air samples, as a direct measure of inhalable allergens.

Methods: Patients from 5 allergist’s practices in the greater Chicago region were provided with instruments and trained to operate them and sample for 5 days in their bedrooms. They recorded demographic, temperature, humidity and other environmental information. Air samples were assayed for 12 common household allergens.

Results: Unique allergen profiles were obtained for 32 patient homes. The percentage of allergens with values above the limit of detection were significant for Der p 1 (8%), Der f 1 (7%), MG-2 (2%), Fel d 1 (7%), Can f 1 (5%), Mus m 1 (4%), Alt a 1 (4%), Asp f 1 (4%), Phl p 5 (4%), Amb a 1 (4%), Der p 1 (4%), Der f 1 (4%), MG-2 (2%), Fel d 1 (7%), Can f 1 (5%), Mus m 1 (4%), Alt a 1 (4%), Asp f 1 (4%), Phl p 5 (4%), Amb a 1 (4%).

Conclusions: The high volume of air sampled permitted the detection of allergens not previously measured in other sample devices. This includes dust mite, cockroach, and cat and dog in homes without cats or dogs. The device may provide a reference measurement for indoor pollen and mold allergens. Surprising Findings:

• Open windows and alternaria allergens.
• HEPA filter use and reduced levels of multiple allergens.
• No significant correlation between allergen levels and position of sampler in room.

Conclusions: This is the first study of its kind to obtain extensive statistical profiles of airborne allergens in homes. This study was possible because of Inspiretec’s in-home sampling technology that is simple to operate by patients, powerful enough to collect at 100L/min in consecutive days, and inconspicuous and quiet during collection period.

• Surprising Findings:
  • Exclusion of cats from room did not correlate with significant reduction of cat allergen,
  • Exclusion of dogs from room correlated weakly with reduced levels of dog allergen,
  • Mouse allergen correlated with open windows, upholstery and carpeting
  • Conventional dust mite mitigating measures did not show significant correlation with allergen reduction.

Methods:

Patients, selected from allergist practices in the Chicago region, were provided with instruments and trained to operate them and sample for 5 days in their bedrooms. They recorded demographic, temperature, humidity and other environmental information. Air samples were assayed for 12 common household allergens.

Demographic Characteristics

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Each Home Has a Unique Airborne Allergen Profile

Airborne Pet Allergen Concentrations Correlate with Number Pets Reported

Major Correlations:

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Acknowledgements: Ms. Andrea Wachter and Ms. Rachel Reboliet for technical, data and editorial support. Study protocol was approved by Quorum Review IRB. This work was funded by Inspiretec Inc.