737 Rat and Mouse Allergens in Homes of Patients with Acute Wheezing Living in Brazil

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RATIONALE: To assess exposure to rat and mouse allergens in homes of patients with acute wheezing living in Brazil.

METHODS: Dust samples collected as part of a previous study on risk factors for acute wheezing in children (Camara et al, JACI 2004) were analyzed for the presence of mouse and rat allergens, Mus m 1 and Rat n 1, respectively. Samples were available from houses of 113 children 0 to 12 years-old, presenting with acute wheezing. Dust samples were collected at four sites of the homes: bedding, bedroom floor, TV room and kitchen, comprising a total of 271 samples available for analysis. Rat n 1 and Mus m 1 levels were quantitated by ELISA using monoclonal antibodies.

RESULTS: Among the 271 samples evaluated, 67 (24.7%) had detectable levels of Mus m 1, with measurements ranging from 0.04 to 3.7μg/g of dust. Of those, six (2.2%) had levels of Mus m 1 greater than 1.6μg/g of dust, which have been associated with sensitization in previous studies. Only 14 (5.1%) samples had detectable levels of Rat n 1, with measurements ranging from 0.04 to 0.3 μg/g of dust; none of the samples had levels above 1.6μg/g of dust. Mouse and rat allergens were found in 41 (36.2%) and 10 (8.8%) houses, respectively, in at least one site of the home.

CONCLUSIONS: In our area, allergens from small rodents, particularly mice, could be detected in homes of children with acute wheezing. These results prompt us to investigate sensitization to these allergens in patients with wheezing and asthma.

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738 Mites Whose Time Has Come: Sensitization to Blomia Tropicalis, and Other Mites in Allergic Patients in Israel

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RATIONALE: House dust mites are important causes of persistent allergic diseases, such as asthma and rhinitis. Various types of mites are found in the house dust of many countries, including Israel, but the prevalence of sensitization to these mites in Israel has not been evaluated.

METHODS: Sensitization of 117 patients with persistent rhinitis or asthma who attended the Allergy and Asthma Center in Tel Aviv (Israel) was evaluated by a skin prick test (SPT) using standardized allergenic extracts. The tested mites were: Dermatophagoides farinae (DF), Dermatophagoides pteronyssinus (DP), Lepidoglyphus destructor (LD), Blomia tropicalis (BT), Tyrophagus putrescentiae (TP), Acarus siro (AS), Glycyphagus domesticus (GD), Blomia kulagini (BK), and Tetranychus urticae (TU).

RESULTS: Most patients (n=95, 81%) had a positive SPT to at least one mite extract. The three most frequent positive reactions were to DF (78%), DP (75%) and unexpectedly, BT (77%). The correlation between DF and DP sensitization was higher than the correlation between DF or DP to BT ($r=0.78$ vs. $r=0.60$, $p<0.05$). Fifteen patients (12.8%) had positive skin reactions to at least one other mite species(none DF, DP or BT), mainly to LP (3.1%) and BK (4.2%).

CONCLUSIONS: The findings of this study identified the most ubiquitous mites to which Israeli patients with allergic rhinitis and asthma are sensitized and indicated the importance of BT as an allergen. Extracts of these mites may be needed for a more accurate diagnosis and effective treatment (e.g. immunotherapy) of respiratory diseases due to mite allergy in Israel and probably in similar countries.

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739 A Two-stage Personal Cyclone Sampler for the Collection of Fungal Aerosols and Direct ELISA and PCR Sample Analysis

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RATIONALE: Fungi are ubiquitous in indoor and outdoor environments and improved techniques are required to obtain accurate measures of exposure. Here we present a new two-stage personal cyclone sampler for the size-fractionated collection of bioaerosols that is compatible with PCR or immunoassay sample processing.

METHODS: A prototype of the sampler was designed and machined from aluminum. The performance of the sampler was characterized in a calm-air settling chamber using experimentally aerosolized fluorescent microspheres and fungal spores of *Aspergillus versicolor* and *Penicillium chrysogenum*. The sampler collects fungal spores into two 1.5 ml Eppendorf tubes while fragments are collected on a back-up filter; samples are then characterized by counting, PCR and ELISA.

RESULTS: The sampler is approximately 68 mm wide and 97 mm tall and weighs 68 g. The first and second Eppendorf tubes have particle collection cut-off diameters of 2.6 μm and 1.6 μm at a flow rate of 2 l/min and 1.8 μm and 1 μm at 3.5 l/min, respectively. The aspiration efficiency is >98% at both flow rates for particles with aerodynamic diameters of $\leq$ 3.1 μm. At 3.5 l/min, the sampler collected around 92% of *A. versicolor* and *P. chrysogenum* spores inside the two Eppendorf tubes, with less than 0.4% of the spores collected on the filter.

CONCLUSIONS: This sampler appears to efficiently collect fungal aerosols and separate fungal spores from fragments. The sampler is compatible with commercially-available sampling pumps and it provides personal aerosol samples that can be readily analyzed by immunoassay or PCR-based techniques.

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740 Risk Factors and Distribution of Mite Allergens in Spain

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RATIONALE: Exposure to mite allergens is a major factor for allergic sensitization.The purpose of this study was to determinate the prevalence and the levels of the house dust mite allergens Der p 1 and Der f 1 in mattresses in Spain, and identify factors associated with high dust mite allergen concentrations.

METHODS: Dust samples were collected from the mattress surface in homes of mite allergic and controls individuals using an adapted vacuum cleaner. A questionnaire, containing questions about the home environment was filled by the patient/control. Dust samples were extracted to determine group 1 allergen levels (Der p 1 and Der f 1) using monoclonal antibodies.

RESULTS: 3,614 mattress samples were collected with enough dust to be analysed. The percentages of mattresses with levels greater than the detection limit for Der p 1, Der f 1, and group 1 were: 66.7%, 37.3% and 73.7%, respectively. Percentages with levels greater than 2 μg/g: 51.7%. 26.6% and 62%, and greater than 10 μg/g: 27.1%, 13.4% and 39.8%, respectively. The levels and the ratio Der p 1/Der f 1 varied according to climatic factors and differed between the climatic regions of Spain. Main predictors of high levels of mite allergens were obvious signs of humidity, absence of heating, high number of inhabitants, age of the mattress and presence of pets.

CONCLUSIONS: Most of the mattresses in Spain contained mite allergens. Half of the mattresses had levels greater than those associated with allergic sensitization. Its distribution depends mainly on climatic factors and residential characteristics.