biliirubin concentration >3.6 mg/dL has tendency to associate with mortality, although not statistically significant.

**DUST MITE ALLERGY**

397 Standardization and Characterization of Dust Mite Extracts Manufactured in the USA
Greg Plunkett, PhD, ALK-Abello, Round Rock, TX.

**Background:** Standardized *Dermatophagoides* dust mite extracts are produced in the US from purified whole bodies. Growth media and the processes for separating mites from media vary among manufacturers. The FDA requires that mite extracts are standardized and labeled in AU/mL. Potency is determined using a laboratory ELISA competition method to compare the product with an FDA reference. The method measures binding of IgE from an FDA supplied sera pool to antigens bound to an ELISA plate and AU is calculated from the ability of the test extract to inhibit the binding relative to the 10,000 AU/mL FDA reference. Since this is the only FDA requirement for potency, the purpose of this study was to compare mite extracts from different US manufacturers for protein complexity, major allergen, and potency using various biochemical characterization techniques.

**Methods:** Der group 1 and 2 allergens were measured in mite extracts from several manufacturers produced over the last 8 years using validated ALK immunoassays. Competition IgE binding was performed using FDA references and sera pools. The effect of the immobilized extract on the relative potency compared to the FDA reference was determined. Protein profiles were determined using SDS-PAGE.

**Results:** The average Der 1 and Der 2 levels and ratio in 10,000 AU/mL products varied considerably (Der 1: 25–140 μg/mL, Der 2: 2–140 μg/mL). The ratio of Der 1/Der 2 was manufacturer related and ranged from 1:1 to more than 10:1. The extract used to coat the ELISA plates had a marked impact on Relative Potency (RP) with up to a 3-fold difference. RP determined by competition IgE binding was correlated with major allergen content but the difference in potency was obtained by coating with different batches of 10,000 AU/mL mites.

**Conclusions:** Often called a “total” IgE test, the competition IgE ELISA is highly dependent on the allergen used to coat the plastic microplate. US mite extracts with the same AU/mL can have very different Der 1 and 2 content.

399 Detection of DER P 2 in the House Dust and Correlation with Mite Number in an Environmental Survey
Jaw-Ji Tsai, MD, PhD, Yi-Hsueh Lin, MS, and En-Chih Liao, PhD, Department of Medical Research, Taichung Veterans General Hospital, Taichung, Taiwan.

**Background:** Aeroallergen avoidance has been promoted in order to prevent sensitization and the correlation between the level of allergen exposure and sensitization has been reported. The aims of this study were to monitor the environmental mite infestation and design a Der p 2 detection kit to estimate the number of mites in house dust samples.

**Methods:** House dust samples were collected from 6 carpets and 2 mattresses monthly from April 2010 to March 2011. The total number of mites was counted under microscopes and Der p 2 concentrations were measured using Der p 2 ELISA kit. The detection kit was constituted using Der p 2 specific mouse monoclonal antibody as capture antibody, and rabbit polyclonal antibody as detection antibody. Both Der p crude extract and rDer p 2 were used as internal standard.

**Results:** The number of mites in the dust samples was significantly higher in the mattresses in comparison with that in the carpets and the total number of dust mites was higher in the summer than any other seasons. The concentration of Der p 2 component in Der p crude extract was analyzed and the result showed that each gram of Der p crude extract contained 25.53 mg of Der p 2. When the number of mites and Der p 2 concentration were measured for the correlation analysis the results showed that there was a good correlation between Der p 2 and number of mites with $R^2 = 0.9652$. **Conclusions:** Dust mites were significantly increased in the dust samples collected from mattresses especially in the summer. The good correlation between Der p 2 concentration and mite numbers indicated that the measurement of Der p 2 can be used to replace direct mite count. Using the Der p 2 detection to monitor environmental mite infestation may be beneficial for allergic subjects to prevent disease activation.

400 Differences in Indoor Allergen Quantification in Hispanic/Latino Children Living in Miami to Those Living in Latin America
Miguel J Lanz, MD,1 Benjamin Efaw, CT,2 and Ronald Harbeck, PhD3.

1Allergy and Asthma, AAADRS Clinical Research Center, Coral Gables, FL; 2Clinical Immunology Lab; 3Advanced Diagnostics Lab, National Jewish Health, Denver, CO.

**Background:** Higher levels of indoor allergens can induce in children more susceptibility to atopy and possibly asthma.

**Methods:** Indoor allergen sampling was collected by families of allergic children referred to our Allergy clinic. Two groupings were based on location of residence, either locally, Miami Florida (MF), or from Latin America (LA). LA children were from Dominican Republic, Ecuador, Venezuela, or Central America. All MF children were of Hispanic/Latino descent, first or second generation, from similar countries. A dust collection device, (Duststream, Indoor Biotechnologies, Charlottesville) was used to vacuum the bedroom samples. These samples came from the mattress, pillows, floors, rugs, and A/C vents. After collecting, samples were weighed, extracted, vortexed, and incubated. For allergen detection, MARIA (Indoor Biotechnologies) was used
to quantify levels of dust mite (DM) allergens, (Dermatophagoides pteronyssinus, Der p 1; Dermatophagoides farinae, Der f 1), and Felis domesticus (Fel d 1), Canis familiaris (Can f 1), Blattella germanica (Blg g 2). Quantification of these allergens was performed on a multiplexing instrument, Luminex 200, (Luminex Corporation, Austin, TX).

**Results:** Samples from 63 MF and 69 LA were returned. There was a statistical significance in total DM levels between both locations. The mean DM level was 118.7 ng/mL from MF and 241.0 ng/mL from LA (\( *P > 0.05 \)). Both were in the moderate range for clinical exposure, 2.37 mcg/mL and 4.82 mcg/mL. Contribution of the total DM significance was from the DP species. The mean DP level was 34.1 ng/mL from MF compared to 188.6 ng/mL from LA (\( **P > 0.001 \)). The clinical exposure of DP was moderate at 3.77 mcg/mL from LA, but in the low range at 0.68 mcg/mL from MF. No significant difference was found in DF between locations, but a minor trend towards more DF exposures in MF rather than LA exists. There was no difference found between locations with the other allergens tested. High cat allergen exposure was found in MF, but with variability and miniscule levels found in LA. Moderate dog and very low cockroach clinical exposures were found in both locations.

**Conclusions:** Our study reveals intriguing indoor allergen levels based on different environments that may contribute to the epidemiology of allergy/asthma in Hispanic/Latino children.

---

**401 House Dust Mite Fauna and Its Relationship to Allergen Skin Tests in Six Mexican States**

Bárbara Isabel Fernández Duro, MSc,1 Naomi Cuervo Pineda, MSc,2 Jesús Alberto Rodríguez Alvizar, MSc,3 Rodolfo Celio Murillo,3 Tila María Pérez Ortiz, PhD,4 and Daniel Juárez Anaya.3 1Allergens Laboratory, National Center of Bioproducts, Havana, Cuba; 2Zoología, IES, Havana, Cuba; 3Allergens Laboratory, Roclé, Puebla, Mexico; 4Colección Nacional de Acaros, Unam, DF, Mexico.

**Background:** House Dust Mites (HDM) are important respiratory allergens all over the world. In Mexico, there have been few studies describing the HDM fauna, and mostly limited only to Mexico City. This study aimed to assess the HDM fauna and its relationship to allergen sensitization in different cities with climatic variations in Mexico.

**Methods:** A total of 60 dust samples were collected from mattresses in 6 Mexican states: Oaxaca, Tamaulipas, Veracruz, Puebla, Chiapas and Campeche; during a period from February to August 2010 and in May 2011. Mites were isolated under a stereomicroscope using lactic acid - 0.9% NaCl solution (1:1). Identification was performed on fixed slides prepared with Hoyer solution. Skin Tests were performed with allergen extracts of different HDM species in the 60 mattress’ owners, who had previously been diagnosed with respiratory allergy.

**Results:** The Pyroglyphidae family was predominant, being found in 100% of dust samples. Dermatophagoides pteronyssinus (Dp) and Dermatophagoides farinae (Df) were the species most frequently found (in over 90% of samples). These findings were in agreement with the Skin Tests results, where 100% of patients were positive to Dp whereas 70% was positive to DF. It was evidenced for the first time the presence of Blomia tropicalis (in Tamaulipas, Veracruz and Campeche) and Dermatophagoides siboney (in Campeche). Both species are important allergenic sources in tropical/subtropical climates, and the last one had been previously reported only in Cuba. Other species found were Acarus siro, Cheyletus sp., Suidasia pontificia, and Gamasidae and Orbataidae families.

**Conclusions:** These results confirm the importance of pyroglyphid HDM, as indoor sensitizers in different climatic and geographical regions in Mexico, as well as, the relevance of tropical species, particularly Blomia tropicalis, in certain areas. They support the need of using allergen extracts of these mite species for improving allergen-specific diagnosis and immunotherapy.

---

**402 Oral Mite Anaphylaxis is Caused by Mite-contaminated Okonomiyaki Mix in Japan**

Kentarō Takahashi, MD, PhD, Yuma Fukutomı, MD, Kiyoshi Sekiya, MD, Masami Taniguchi, MD, PhD, and Kazuo Akiyama, MD. Clinical Research Center for Allergy and Rheumatology, National Hospital Organization Sagamihara National Hospital, Sagamihara, Kanagawa, Japan.

**Background:** Anaphylaxis after the ingestion of foods contaminated with mites has recently been reported. It is an immediate and potentially life-threatening reaction in patients with previous allergic rhinitis and/or asthma following the ingestion of mite-contaminated foods. Case series and case reports thus far have shown that mite-contaminated wheat flour is the major cause of oral mite anaphylaxis. However, we have encountered 8 cases of oral mite anaphylaxis in our hospital not caused by mite-contaminated wheat flour but by mite-contaminated okonomiyaki mix.

**Methods:** To review the current literature, in addition to our patients, we performed a MEDLINE search of articles on oral mite anaphylaxis in Japan up to June 2011 and collected patient characteristics, interview contents, results on specific IgE against mites, wheat, and pollen and other antigens, results of skin prick tests including those using extracts from mites and/or culprit flours, and microscopic examination results.

**Results:** We found thirty oral mite anaphylaxis patients in Japan twenty-eight (93.3%) of whom ingested okonomiyaki or takoyaki, prepared at home using okonomiyaki mix (24 patients) or takoyaki mix (4 patients), respectively, which was previously opened and stored for months at ambient temperature. Takoyaki mix is similar to okonomiyaki mix, which is composed of flour, dried scallop, bonito, and mackerel. The other 2 patients ingested pancake mix. Microscopic examination of thirteen patients’ mixes revealed contaminating mites. Thyrophagus putrescentiae, Dermatophagoides pteronyssinus, Dermatophagoides farinae were found in mix samples of 4, 3, and 3 patients, respectively. The specific IgE against each mite is generally upregulated, which might be affected by cross-reactivities to other mites. Especially, the specific IgEs to Dermatophagoides pteronyssinus and Dermatophagoides farinae were more than class 2 in all cases. It is suggested that mites are attracted to the flavors of okonomiyaki and takoyaki mixes and invade from a cracker in a flour sack, and proliferate under favorable conditions.

**Conclusions:** Mite-contaminated flavored mix is a major cause of oral mite anaphylaxis in Japan.

---

**EOSINOPHILIC DISEASES**

**403 International Survey on Evaluation and Management of Eosinophilic Esophagitis**

Gisoo Ghaffari, MD. Medicine/Pulmonary-Allergy and Critical Care Medicine, Pennsylvania State University, Hershey, PA.

**Background:** The criteria for diagnosis of Eosinophilic Esophagitis (EoE) have been established; however the recommendations regarding evaluation and management of patients have been debated. The purpose of this survey study is to assess how providers across the world, diagnose and treat patients with EoE and how education impacts their approach.

**Methods:** The link to a web-based survey was sent to the members of WAO, ACAAI and AAAAI. From October 2010 to January 2011, the participants were asked to respond to 24 questions. The qui-square test was used for comparison between groups which included: practitioners from the United States versus other countries, male versus female, different specialties, years in practice, academic versus private, rural versus suburban, number and frequency of patients, number of lectures and workshops the practitioners attend.

**Results:** Among the 200 respondents, 70% were from the United States. Majority of respondents were allergists/allergolosits. The majority responded that biopsy is required to diagnose EoE, that they do ask about personal and