276 Is There Such a Thing As a Hypoallergenic Dog?

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RATIONALE: Indoor pets are a common source of indoor allergen. Despite scientific evidence, certain breeds are commonly perceived as being hypo-allergic. This study was initiated to evaluate that perception.

METHODS: Using a standard protocol to obtain saliva, *Can f1* concentration was measured in 4 Breeds of dogs; 8 dogs in each breed. The chosen breeds were Portuguese Water Dogs (chosen by the Obama family), Labradoodles, Shiba Inus, and Chihuahuas. Samples were taken every other month for a year for a total of 32 samples.

RESULTS: Average Can f1 concentation levels, which resemble clinical exposure within a home were used for comparison. The average salivary Can f1 concentrations were as follows: PWD: 5.3ug/ml; LD: 2.4ug/ml; SI 3.6ug/m/; CH 3.4ug/ml. Separately, labradors, trained as leader dogs, had sequential Can f1 concentrations measured. The average Can f1 concentration was 1.8ug/ml.

CONCLUSIONS: No Breed had a significant difference in salivary Can f1concentration over the course of a year. Leader dogs (labradors) had the lowest levels. We believe that these results suggest that the consititution of the dog may play an important role in Can f1 production, and should be further studied.

277 Comparison of Airborne Allergen Levels Collected On Filters with Dust Borne Allergen Levels Collected by Vacuum

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RATIONALE: Airborne allergen exposure versus dust-borne allergen exposure is of considerable interest to allergists. To examine the relationship of allergen levels collected from high efficiency HVAC filters with allergen levels in house dust we conducted the following study.

METHODS: Subject homes were a subset of homes enrolled in the Kansas City Safe and Healthy Homes Project. Homes were provided with vacuum cleaners and AllergyZone FQT12 one-inch disposable furnace filters with high-efficiency media. Approximately 3 months later, floor dust was collected from vacuum units and furnace filters were collected from the HVAC system. Filters were vacuumed to collect dust and all dust samples were sieved and extracted in PBS. Levels of Fel d1, Can f1, Mus m1, Der f1, Der p1 and Bla g2 were evaluated using MAB based immunoassays from indoor Biotechnologies. Levels of Fungal antigens were evaluated by polyclonal assays using materials from Greer Laboratories.

RESULTS: Comparison data was obtained for 29 homes. Average allergen levels for vacuumed dust ranged from 1.96ug/g (Can f1) to 0.26ug/g (Mus m1) and for filter dust from 11.14ug/g (Fel d1) to 0.23ug/g (Mouse). Correlations between vacuumed dust and filter dust ranged from positive 0.86 (Bla g2) to negative .19 (Feld1). For the Cat allergen, furnace filter dust was significantly higher than the vacuum dust and for Dust mite allergen vacuumed dust contained significantly more allergen than filter dust. For fungal antigens Alternaria, Aspergillus and Cladosporium levels in filter dust were significantly higher than in floor dust.

CONCLUSIONS: Allergens partition into differing dust borne and airborne exposures.

278 Reduction of Domestic Allergen Levels in Carpets and Soft Furnishings in US Homes Using a Proprietary Hot Water Extraction Cleaning Process

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RATIONALE: Allergen avoidance in the home should address contaminant reservoirs e.g. carpets and soft furnishings. The impact of a proprietary hot water extraction cleaning process on surface and airborne allergens and microorganisms was evaluated.

METHODS: 20 US homes were studied. Air and surface samples taken before and after hot water extraction were analyzed for allergen and microorganism levels by ELISA and total viable counts. Airborne particle counts were monitored during room disturbances before and after cleaning. Carpet layers were analysed for particulate and allergen content by scanning electron microscopy and ELISA, respectively. Three carpets were similarly sampled in an environmental test chamber.

RESULTS: Post-hot water extraction cleaning, surface levels of Derp1/Derf1, Feld1 and Canf1 were reduced by 83%, 96% and 90% on soft furnishings ($p=0.04$) and 91%, 95% and 97% on carpets ($p=0.01$), respectively. Airborne Feld1 was reduced by 67% ($p=0.01$). Reductions were also seen for airborne mold (55%, $p=0.01$) and surface bacteria (90%, $p=0.05$). Test chamber airborne particle counts during room disturbances in the presence of three different carpets were reduced post-hot water extraction cleaning by 78%, 37% and 65%. Allergen was predominantly found in the carpet base (≥71% of Feld1/Canf1). Hot water extraction cleaning had a greater effect on allergen levels in the upper layers (74-100% reduction), than on base layer levels (15-91% reduction).

CONCLUSIONS: Incorporation of a hot water extraction cleaning procedure in a home allergen avoidance strategy, at yet to be determined intervals, significantly reduces the levels of bio-contaminants to which occupants are exposed.

279 Digital Pathology Techniques in Pollen Assessment

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RATIONALE: With advancements from traditional microscopy into virtual digital pathology, observations and measurements of specimen have become more efficient. Previous research of various grass pollens has not been made utilizing digital pathology. This research explores the digitization program of Aperio ImageScope and analyzes the size and structure of airborne pollen.

METHODS: Slide samples of *Amaranthus* (Pigweed), *Ambrosia* (Ragweed), *Phleum pratense* (Timothy), *Quercus nigra* (Black Oak), *Salix nigra* (Willow), *and Zeya mays* (Corn) at 100x were converted to .svs pictures using ScanScope and ImageScope hardware and software (Aperio company, CA). Intine, exine, and total diameter were measured for 100 pollen grains from each sample.

RESULTS: *Phleum pratense* had intine ($x=1.6\pm.4$ μ); exine ($x= .7\pm.3$ μ); with a medium sized diameter (39.2 ± 4 μ; mode=41.1 μ). The smallest pollen diameter, *Salix nigra*, (16.9 ± 1.4 μ; mode=15.9 μ) had large intine to diameter ratio (I:D=4.4%) and exine to diameter ratio (E:D=5.6%). *Zeya mays* had intine ($x=.6\pm.2$ μ); exine ($x=1\pm.2$ μ); with the largest mean diameter (93.1 ± 6.8 μ; mode=103.3 μ). *Ambrosia* (diameter=20.5 ± 1.2 μ; mode=21 μ) had a pollen I:D of 6.3% and E:D of 4.8%. *Amaranthus* (diameter=30.5 ± 2.6 μ; mode=32.8 μ) had an intine of $1.2\pm.3$ μ and exine of $.3\pm.1$ μ. All median measurements of intine and exine were < 1.6 μ. For *Amaranthus*, the median intine and exine was 1.1 μ and.3 μ.; with *Phleum pratense* at 1.6 μ and .7 μ.

CONCLUSIONS: Digital imaging provides another venue for future pollen analyses that may provide for automated processes for future palynologic studies.

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