mice. Future studies will no doubt address the applicability of these findings to humans.

**ENVIROMENTAL ALLERGENS**

**DISTRIBUTION AND REMOVAL OF CAT, DOG, AND MITE ALLERGENS ON SMOOTH SURFACES IN HOMES WITH AND WITHOUT PETS**


**Purpose of the Study.** To characterize the distribution of dog (Can f 1), cat (Fel d 1), and mite (Der p 1 and Der f 1) allergens on hard surfaces in homes with and without pets and to evaluate the efficiency of removing allergens from hard surfaces by wiping with a dry dust cloth and by vacuum cleaning using the dust brush attachment.

**Study Population.** Dust samples were collected from 24 homes in Dayton, Ohio, that met the following criteria: having at least 1 area with a large amount of smooth, hard-surfaced wall; 2 hard surface floors in 2 separate rooms; sufficient hard furniture surfaces; and lack of cleaning of floors, furniture, and walls for 7 days.

**Methods.** Two adjacent 1-square meter areas of smooth flooring in 2 separate rooms and a wall were selected and marked out for dust sampling. At each sampling area, half of the area was dusted by wiping with a Pledge Grab-It (SC Johnson, Racine, WI) dust cloth. The adjacent area was then dusted with a vacuum cleaner using the dust brush attachment. The concentrations of Der f 1, Der p 1, Fel d 1, and Can f 1 allergens were determined from each sample.

**Results.** Dust from hard surfaces and carpets in homes with cats had significantly (P < .05) more Fel d 1 than homes without cats. This is in contrast to the mean levels of Can f 1 on walls and furniture in homes without dogs, which was not significantly less (P < .05) than for homes with dogs. The levels of mite allergen detected on hard surfaces was very low, with 16, 21, and 17 of the 24 homes having no detectable Der f 1 or Der p 1 on smooth floors, walls, and furniture respectively. The mean total quantity of allergen collected by the Grab-It dust cloths was 1.05 to 3.4 times greater than the brush-vacuuming method.

**Conclusions.** As expected, significantly greater amounts of Fel d 1 were found in individual homes with cats compared with those without cats. A key finding in this study, however, was that detectable levels of dog allergen were present in all but one of the homes without dogs. Levels of mite allergen were determined on hard surfaces was very low, with 16, 21, and 17 of the 24 homes having no detectable Der f 1 or Der p 1 on smooth floors, walls, and furniture respectively. The mean total quantity of allergen collected by the Grab-It dust cloths was 1.05 to 3.4 times greater than the brush-vacuuming method.

**Reviewers’ Comments.** This article stresses the need for environmental control measures not only in homes with pets, but also in those without. We often must remind our patients, even those that live without pets, to clean their surroundings in an effective manner. This study also demonstrates that it is important to include cleaning walls, furniture, and smooth floors along with carpeting to reduce exposure to indoor allergens. This should greatly improve the quality of life for those that suffer from allergic disease.
allergic disease improve after removal from an environment with a large allergen burden. This study furthers our knowledge regarding allergen exposure in day care centers. The relationship between allergen burden and development of allergic disease was not looked at in this study.

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PREDICTION AND PREVENTION

ALLERGY DEVELOPMENT AND THE INTESTINAL MICROFLORA DURING THE FIRST YEAR OF LIFE


Purpose of the Study. Numerous studies have demonstrated that the prevalence of atopic diseases is lower in the Central and Eastern European countries as compared with Western European countries. The intestinal microflora is a likely source for the induction of immune deviation in infancy. The purpose of this study was to prospectively relate the intestinal microflora to allergy development in 2 countries differing with respect to the prevalence of atopic disease.

Study Population. A cohort of 24 infants in Estonia and 20 infants in Sweden followed prospectively through the first 2 years of life.

Methods. Stool samples were obtained at 5 to 6 days and at 1, 3, 6, and 12 months, and 13 groups of aerobic and anaerobic microorganisms were cultivated through use of standard methods. Allergic status was defined as presence of atopic dermatitis and/or at least 1 positive skin test result. Skin prick testing was performed at 3 and 6 months to fresh egg white and cow’s milk. At 1 and 2 years of age, skin testing to dust mites, cat, dog, cockroach, birch, and timothy were conducted.

Findings and Results. By the age 2 years, 9 Estonian and 9 Swedish infants developed atopic dermatitis and/or positive prick skin test result. In comparison with healthy infants, infants who developed allergy were less often colonized with enterococci during the first month of life (72% vs 96%; P < .05) and with bifidobacteria during the first year of life (17%–39% vs 42%–69%; P < .05). Furthermore, allergic infants had higher counts of clostridia at 3 months (median value: 10.3 vs 7.2 log_{10}; P < .05). The prevalence of colonization with Staphylococcus aureus was also higher at 6 months (61% vs 23%; P < .05), whereas the counts of Bacteroides were lower at 12 months (9.9 vs 10.6 log_{10}; P < .05).

Conclusions. Differences in composition of the gut flora between infants who will and infants who will not develop allergy are demonstrable before the development of any clinical manifestations of atopy. Because the observations were made in countries with different standards of living, these findings could indicate a role for the intestinal microflora in the development of and protection from allergy.

Reviewer’s Comments. According to the “hygiene hypothesis,” atopy results from the imbalance between Th1 and Th2 type immune responses. Microbial stimulation is associated with induction of interleukin (IL)-12 and Th1-type responses. Therefore, an early and more extensive colonization with aerobic bacteria in healthy infants could conceivably protect from development of atopy. Additional studies are needed to elucidate the prophylactic potential of supplementation with probiotic microorganisms such as Lactobacillus or Bifidobacterium sp.

Diet and Asthma, Allergic Rhinoconjunctivitis and Atopic Eczema Symptom Prevalence: An Ecological Analysis of the International Study of Asthma and Allergies in Childhood (ISAAC) Data


Purpose of the Study. To provide a global analysis of prevalence rates of wheeze, allergic rhinoconjunctivitis, and atopic eczema in relation to diet, as defined by national food intake data.

Study Population. A total of 721 601 children of 2 age groups (6- to 7- and 13- to 14-year-olds) from 156 collaborating centers in 56 countries from the International Study of Asthma and Allergies in Childhood (ISAAC).

Methods. Symptom prevalence data was collected by video questionnaires assessing asthma symptoms and severity, allergic rhinoconjunctivitis symptoms, and atopic dermatitis symptoms. Using the 1995 food balance sheet and food supply data from the Food and Agriculture Organization (FAOSTAT) Web site, figures were compared of food and nutrient intake among the large number of countries in the ISAAC Phase One. Food consumption per capita is calculated to determine per capita consumption of macro- and micronutrients as a percentage of total energy consumption. Symptoms of wheeze, allergic rhinoconjunctivitis, and atopic eczema symptom prevalence were regressed against the per capita food intake and adjusted for gross national product to account for economic development.

Results. The 13- to 14-year-old age group showed a consistent pattern of decreases in symptoms of wheeze (current and severe), allergic rhinoconjunctivitis, and atopic eczema, associated with increased per capita consumption of calories from cereal and rice, starch, and vegetable nutrients (vitamin A, E, protein, monounsaturated fatty acids, polyunsaturated fatty acids, and saturated fats). The video questionnaire data for 13- to 14-year-olds and ISAAC data for 6- to 7-year-olds showed similar patterns for these foods. There was no association between monounsaturated fatty acid and polyunsaturated fatty acid intake. Olive oils showed a negative association with asthma, allergic rhinoconjunctivitis, and atopic eczema, while soy oil consumption was associated with all 3 conditions.

Conclusions. A consistent inverse relationship was seen between prevalence rates of 3 allergic conditions and the intake of starch, cereals, and vegetables. If these findings could be generalized, and if the average daily consumption of these foods increased, it is speculated that an important decrease in symptom prevalence may be achieved.

Reviewer’s Comments. This is an interesting study that evaluates a large population of subjects to determine if there is any consistency between dietary intake of certain foods and the development of atopic disease. The authors suggest that perhaps by increasing the daily per capita amount of calories from cereal and rice that the prevalence of atopic disease could be decreased. Additional study would be required to evaluate if there are certain substances in these foods that may have benefit. Until then, I am not sure that increasing intake of starch, cereals, and vegetables alone will play a significant role in decreasing...
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