

169 Are Consumer Goods Made from Spun Milk Fibers a Hazard to Milk-Allergic Patients

S. L. Hefle, J. A. Nordlee, D. M. Lambrecht; Food Allergy Research & Resource Program, University of Nebraska, Lincoln, NE.

RATIONALE: Select consumer goods are now made from 100% dehydrated spun cows' milk fiber. We wanted to determine if milk protein/allergens could dissociate from these products and pose a hazard to milk-allergic patients.

METHODS: Saline buffer extracts of a shirt and sleep mask made from milk fiber were tested by ELISA for milk (rabbit antibodies for casein and whey) and by RAST inhibition analysis using nonfat dry milk (NFDM) as solid phase and sera containing human IgE anti-milk as the antibody source.

RESULTS: The t-shirt extract produced an ELISA value of 6,000 parts per million (ppm) milk protein and the sleep mask extract contained 7,100 ppm milk protein. RAST inhibition analysis indicated significant milk allergen present in both extracts and epitopes recognized by serum IgE from milk-allergics were nearly identical to those of the NFDM solid phases.

CONCLUSIONS: Clothing and other consumer goods made from spun milk fiber possess easily extractable milk allergens sufficient to pose a potential hazard to milk-allergic patients, especially if in contact with aqueous solutions (sweat, saliva from infant chewing/drooling, washing with other clothing, etc). Also, they may pose a risk of contact and inhalation reactions without need for a hydrophilic environment. As a result, milk-allergic patients and their caretakers should be counseled to avoid these products.

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170 Food Allergy Education for Non-Allergist Physicians: A Needs Assessment Survey

A. Kumar¹, C. Bruhn², S. S. Teuber¹, S. H. Sicherer³; ¹Rheumatology, Allergy, and Clinical Immunology, University of California, Davis, Davis, CA, ²Food Science and Technology, University of California, Davis, Davis, CA, ³Allergy and Clinical Immunology, Mount Sinai School of Medicine, New York, NY.

RATIONALE: Understanding the educational needs of non-allergists who commonly treat food-allergic patients is an important step toward creating valuable instructional materials.

METHODS: A 23-item, anonymous, structured questionnaire was distributed to primary care and emergency department physicians in the Mount Sinai and University of California, Davis healthcare systems.

RESULTS: Of the 75 participants, 99% cared for patients with food-allergies and 80% treated patients during acute food-allergic reactions. Physicians listed the following as components of their management plan for life-threatening food allergy: auto-injectable epinephrine (78%), dietary avoidance (37%), and allergist referral (30%). However, detailed education on food allergen avoidance is provided by only 25%. Two-thirds reported being comfortable teaching a patient how to use auto-injectable epinephrine, but only 33% have trainer devices available. Patient education handouts on food allergy are used by 25%. On a Likert scale, "very comfortable" was selected by 12% regarding diagnosis and 8% regarding ongoing management of food allergy. Regarding prior training, clinical experience (61%) was the most common modality and 17% indicated "I haven't really seen any good presentations on this subject." Areas identified for which physicians desired more information included: diagnosis (52%), patient education (50%), and referral guidelines (59%). The preferred methods of education include small on-site conferences, printed materials, and online training.

CONCLUSIONS: Almost all primary care and emergency medicine physicians surveyed treat patients with food allergy. This survey indicates suboptimal comfort with diagnosis and management but interest in further education.

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171 Identification and Standardization of the Anti Food Allergy Chinese Herbal Formula, FAHF-2, by HPLC Chromatographic Fingerprinting

Y. Chen¹, Z. Zou¹, D. Chen¹, H. A. Sampson¹, X. Li²; ¹Mt. Sinai, New York, NY, ²Pediatrics, Mt. Sinai, New York, NY.

RATIONALE: FAHF-2, composed of 9 traditional Chinese herbs, was shown to have potential for treating peanut allergy. However, herbal products containing many chemical constituents makes standardization challenging. Chromatographic fingerprinting has been suggested as a practical and comprehensive approach for evaluating the quality of herbal extracts. This study, aimed at developing a botanical drug for treating food allergy, was undertaken to establish an HPLC fingerprint and chemical markers for standardizing FAHF-2.

METHODS: Extracts of FAHF-2 and its 9 individual herbs were analyzed under the same conditions. HPLC analysis was performed on a C18 column. A mixture of acetonitrile and 0.15% phosphoric acid was used as mobile phase in a linear gradient with a flow rate of 1 ml/min. The wavelength range of the photodiode array detector was set from 200 to 600 nm.

RESULTS: The HPLC fingerprint of FAHF-2 can be used for standardizing FAHF-2 at three levels: (1) the HPLC fingerprint established 30 peaks, which allow us to monitor batch-to-batch consistency; (2) peak contributions by individual herbs were identified by comparing the FAHF-2 fingerprint with individual herbs. Therefore, if there is alteration of HPLC fingerprint, we will be able to determine which individual herb(s) account for the alteration; (3) the chemical constituents of 10 major peaks were identified using chemical standards. These major chemical constituents can be used as chemical markers, and perhaps ultimately for identifying the active constituents in FAHF-2.

CONCLUSIONS: HPLC fingerprinting with chemical markers was established for standardizing the herbal compound, FAHF-2, which is critical in the development of FAHF-2 as a botanical drug.

172 Cloning and Characterization of Walnut Lipid Transfer Protein: Not a Major Allergen in Walnut-Allergic U.S. Patients

S. S. Teuber¹, E. Pastorello², W. R. Peterson¹, A. M. Dandekar³, S. Uratsu³; ¹Internal Medicine, UC Davis School of Medicine, Davis, CA, ²Internal Medicine and Dermatology, Ospedale Maggiore IRCCS, Milan, ITALY, ³Pomology, UC Davis, Davis, CA.

RATIONALE: Lipid transfer protein, a protein with inherent resistance to gastric digestion, has been isolated from walnut kernel and determined to bind IgE from Italian patients with walnut allergy. Many of these patients had been initially sensitized to lipid transfer protein in peaches. We sought to determine if lipid transfer protein was also a major allergen for U.S. patients with severe walnut allergy, and if the cloned, expressed protein could inhibit IgE binding to the native protein.

METHODS: RNA was isolated from walnut embryos and used as a template for cDNA. 3' and 5' RACE was performed using primers based on the coding sequence for walnut lipid transfer protein from a walnut embryo EST database. Full-length cDNA was subcloned into the pMAL-c2X vector and expressed as a recombinant fusion protein in *E. coli*. Native lipid transfer protein, sera from Italian patients, and 34 sera from U.S. patients, most of whom had severe, life-threatening reactions to walnut, were used in IgE immunoblotting and inhibitions.

RESULTS: The sera from Italian patients with walnut allergy and IgE towards lipid transfer protein were able to bind the recombinant, and the recombinant was able to absorb out reactivity to the native walnut lipid transfer protein and vice-versa. However, sera from U.S. patients, except one, failed to show IgE binding to the native or recombinant lipid transfer protein.

CONCLUSIONS: Although lipid transfer proteins are an important class of food allergens, it appears that there are dramatic geographic influences on sensitization to this class of allergen which warrant further investigation.

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