February 2005

Is the Low Prevalence of Peanut Allergy in Israel Due to Hypoallergenic Peanut Products?

S. J. Maleki
USDA-Agricultural Research Service

S. L. Hefle
University of Nebraska - Lincoln

H. Cheng
USDA-Agricultural Research Service

Y. Katz
Sackler School of Medicine,Tel-Aviv University, Assaf-Harofeh Medical Center, Zerifin, ISRAEL

G. Du Toit
Department of Paediatric Allergy and Immunology, Imperial College at St Mary's Hospital, London, UNITED KINGDOM.

See next page for additional authors

139 Is the Low Prevalence of Peanut Allergy in Israel Due to Hypoallergenic Peanut Products?

S. J. Maleki[1], S. L. Hefle[2], H. Cheng[1], Y. Katz[3], G. Du Toit[4], G. Lack[4]; [1]Food Allergy Unit, USDA-Agricultural Research Service, New Orleans, LA, [2]Food Allergy Research and Resource Program, University of Nebraska, Lincoln, NE, [3]Sackler School of Medicine,Tel-Aviv University, Assaf-Harofeh Medical Center, Zerifin, ISRAEL, [4]Department of Paediatric Allergy and Immunology, Imperial College at St Mary's Hospital, London, UNITED KINGDOM.

RATIONALE: In Israel the majority of infants less than 12 months old regularly consume peanut products in contrast to the UK where infants avoid peanut products. Previous studies suggest a low prevalence of peanut allergy in Israel and raise the possibility that the processing of Israeli peanut snacks renders them hypoallergenic. Therefore, the allergen content and allergenicity of the most popular peanut products consumed by children and infants in the UK and Israel were compared to determine if such differences could explain the variation in the prevalence of peanut allergy.

METHODS: The total protein content of whole snack products was determined using LECO analysis and various immunoassays were utilized to determine the percentage of peanut protein in each product. The products were all normalized according to peanut protein content and subjected to SDS-PAGE, Western blot and Slot blot analysis with anti-peanut, anti-Ara h 1, 2 and 3 antibodies and pooled serum from peanut allergic individuals.

RESULTS: Peanut protein levels from Israeli and U.K. products were found to be between 68-100%. The Ara h 1, Ara h 2 and Ara h 3 proteins in each peanut product were intact and the levels were comparable. Similarly, IgE binding analysis with pooled serum from 9 allergic individuals was nearly identical when the same amount of peanut protein was used for each product.

CONCLUSIONS: The contents of peanut protein, individual major allergens and IgE binding capacity of the popular snacks from Israel cannot explain the large discrepancies in the prevalence of peanut allergy among the two countries.

Funding: National Peanut Board and the USDA