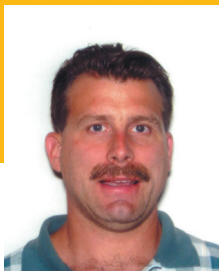


Editorial



Food Processing and Allergenicity

This special issue contains the peer reviewed manuscripts presented during an International Workshop on the subject of evaluating the effect of various food processing methods on the potential human allergenicity of novel proteins. The workshop was co-sponsored by the Protein Allergenicity Technical Committee within the Health and Environmental Sciences Institute (HESI), the International Life Sciences Institute (ILSI) Research Foundation, ILSI International Food Biotechnology Committee (IFBiC), ILSI North America, and ILSI Europe.

The objective of this workshop was to discuss the impact of various methods of food processing on the allergenic potential (*i. e.*, those food allergies classified as type I hypersensitivity reactions mediated by IgE antibody) of proteins and foods. The effect of food processing on the bioavailability of protein allergens to the immune system and on the sensitization phase of food allergy was discussed. The complexity and limitations of studies measuring the digestibility, stability, and allergenicity of processed food allergens were also examined.

In the present report, the workshop participants established a consensus that (i) food processing methods may impact the allergenicity potential of proteins and foods, (ii) there are no general rules as to how different allergenic foods respond to physical, chemical, or biochemical processing methods (*i. e.*, some allergenicity is either unaltered, decreased [epitopes destroyed], or increased [appearance of

new epitopes or unmasking of existing epitopes], (iii) the immune response to individual allergens and the overall allergenicity of the food can be influenced by the conditions of food processing; variability in the allergen composition of the whole food; the food matrix structure; multiplicity of IgE epitopes present; and stability of the allergen scaffold, (iv) although processing may alter the allergenicity of foods, the complete elimination of the allergenic potential of foods by using food processing was unlikely and (v) the impacts of processing might one-day be included in the risk assessment as one variable that may effect thresholds of elicitation; however, currently there is a lack of an appropriate testing strategy and data for various allergens that precludes including food processing data in the risk assessment process.

Herewith are presented (i) antigen presenting cells and T cell interactions in the gastrointestinal tract, (ii) *in vitro* digestion methods for assessing the effect of food structure on allergen breakdown, (iii) aspects of food processing and its effect on allergen structure, (iv) impact of food processing on the structural and allergenic properties of food allergens, (v) effects of food processing on food allergens, and (vi) utility of animal models for evaluating hypoallergenicity. These papers represent the individual authors' work and are not necessarily the opinions of ILSI. A summary of the workshop has been published (*Food Chem. Toxicol.* 2007, 45, 1116–1122).

The sponsors of this workshop operate as part of the International Life Sciences Institute (ILSI), which is a nonprofit, worldwide foundation that seeks to improve the well-being of the general public through the advancement of science. Its goal is to further the understanding of scientific issues relating to nutrition, food safety, toxicology, risk assessment, and the environment by bringing together scientists from academia, government, and industry.

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“... the effect of various food processing methods on the potential human allergenicity”