

Food Allergy Interest Group



[EAACI Interest Group on Adverse Reactions to Foods.](#)

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1. Hot topics in Food Allergy

a) Food allergy epidemiology

It is difficult to know the accurate burden of food allergies because of the lack of Population-based food allergy prevalence estimates determined by the diagnostic gold standard - double-blind, placebo-controlled oral food challenges. Some recent papers have highlighted the importance of developing methodological standardization and of being cautious in relying on self-reported estimates. The EU funded integrated research project EuroPrevall is trying to provide new data on a thorough methodological basis – now in its fourth year. Standardised DPCFC studies are ongoing.

b) Alcohol and food allergy

It has been known for many years that alcoholic drinks are potential triggers of hypersensitivity and recent surveys concluded that these reactions are quite common. It has also been recently documented that alcohol has a strong influence on the immune system, such as increase in serum total IgE and suppression in Th1-mediated allergen-specific immune response.

In the XXVII Congress of the European Academy of Allergology and Clinical Immunology, in Barcelona, a workshop on "The influence of Alcohol on the immune system and allergic disease" is scheduled.

c) Thresholds for food allergens

Thresholds constitute a critical piece of information in assessing the risk from allergenic foods at both the population and individual levels. Population thresholds can help both the food industry and regulatory authorities assess the public health risk and design appropriate food safety objectives to guide risk management. Conversely, for allergic individuals and health professionals, individual threshold data are very important for allergy management of individual patients. An important gap of knowledge is whether or not threshold levels of individuals change over time.

Recent papers have reviewed this theme and described challenge protocols that should be broadly used so that data are generated that can readily increase the power of existing studies.

d) Allergenicity assessment of genetically modified foods

Genetically modified foods are being increasingly used to improve the quantity and quality of food supplies in several countries. The ability of a protein to induce an allergic sensitization depends on the intrinsic characteristic of the protein as well as the environmental conditions and the genetic diversity of the population. These new foods constitute a challenge to the scientific community since they may be responsible for the establishment of new sensitizations. Strategies for assessing potential cross-reactivity of novel proteins with known allergens are based on bioinformatics approaches as well as serological analysis using sera of subjects with confirmed food allergy to the donor organism and the host plant.

e) Eosinophilic gastrointestinal disease

Patients with eosinophilic gastrointestinal disease still represent a real diagnostic and therapeutic challenge. Recent reports have shed some light in the pathophysiology and management of these diseases. A key role for IL-13 was identified and was reported that biopsy specimens in children with eosinophilic esophagitis showed comparatively more subepithelial fibrosis, increased TGF- β 1 levels, increased vascular density, and expression of vascular cell adhesion molecule 1. Additionally, a consensus report about diagnosis and management of eosinophilic esophagitis was published.

f) Prebiotics and probiotics

Recent studies have suggested that the use prebiotics (nondigestible food components that benefit the host by selectively stimulating the growth or activity of non-pathogenic bacteria in the colon) and/or probiotics (live bacteria that colonize the gastrointestinal tract and provide a health benefit to the host) could reduce atopic diseases.

Nevertheless, in view of the conflicting results, published reviews alerted that there is still insufficient evidence to recommend the addition of prebiotic and/or probiotics to infant feeds for prevention of allergic disease or food hypersensitivity.

g) Effects of nutritional interventions on the development of food allergies

Programs of dietary allergen and environmental allergen avoidance have shown a positive effect in preventing or delaying the onset of atopic disease but their effect is largely limited to infants at high risk of developing allergy. The prevention effects of isolated dietary interventions have been a source of constant study, with some mixed results. A summary of dietary prevention studies was recently published as a clinical report from the American Academy of Pediatrics, this document reviews the nutritional options during pregnancy, lactation, and the first year of life that may affect the development of atopic disease (atopic dermatitis, asthma, food allergy) in early life.

h) Food allergy diagnosis

DBPCFC is the accepted standard of food allergy diagnosis, despite the fact that it is not perfect and false negative as well as false positive results may occur. Studies suggest an effect of the blinding matrix on the outcome of DBPCFC, but details of this phenomenon are largely unknown. EuroPrevall is attempting to develop standardised ready to use meals for DBPCFC and elucidate in detail effects of the matrix on the allergenicity of foods. In the field of in vitro diagnosis of food allergy, there is a trend to move away from extracts to purified food allergen molecules and to proceed from single testing to multiplex testing, and even include IgE to epitopes as diagnostic marker. Expected benefits are refined information in regard to the clinical situation such as severity or progression of the disease, and cross-reactivity or geographic differences.

i) Treatment strategies in food allergy

There are numerous modalities under investigation to treat food allergy. Recent studies in murine models have provided insights towards future therapies, namely IL-12, TGF- β and synthetic agonist of Toll-like receptor 9. Regarding human studies, several recent studies have focused on the utility of oral tolerance induction and of specific immunotherapy with food allergens or homologous pollen proteins. Additionally, traditional Chinese herbal remedies that have shown efficacy in murine models of peanut allergy have begun human trials. FAST – an EU funded study on the establishment of a specific immunotherapy for food allergy has just been initiated.

j) Molecular basis of food allergy

Several studies have been published recently that evaluate allergen structure and IgE binding to food allergens and related non-food allergens, such as pollens. These studies provide additional insights toward improved diagnosis, prediction of crossreactivity, reaction severity, and treatment of food allergic patients. In some diseases food-specific T-cells may be of particular importance. This has been shown for atopic dermatitis – here

heated or digested foods which do not lead to IgE binding anymore can still cause clinical responses associated with T-cell reactivities. Clearly, more studies are needed to better elucidate the complex pathophysiologic network of food allergy.

2. New books published

a) Food Allergy: Adverse Reactions to Foods and Food Additives.

D.D. Metcalfe, H.A. Sampson, R.A. Simon. Forth edition, Blackwell publishing, 2008.

b) Clinical Immunology.

R.R. Rich, T.T. Fleisher, W.T. Shearer. Third edition, Mosby-year book inc, 2008.

c) Pediatric Allergy, Asthma and Immunology.

A. Cantani. First edition, Springer verlag inc, 2008.

3. Books in press

a) Allergy and Allergic Diseases.

A.B. Kay, A.P. Kaplan, J. Bousquet. Second edition, Blackwell publishing, 2008.

4. Relevant must read papers

1) The prevalence of food allergy: a meta-analysis. Rona RJ, Keil T, Summers C, Gislason D, Zuidmeer L, Sodergren E, Sigurdardottir ST, Lindner T, Goldhahn K, Dahlstrom J, McBride D, Madsen C. J Allergy Clin Immunol 2007;120:638-646.

2) The prevalence, cost and basis of food allergy across Europe. Mills EN, Mackie AR, Burney P, Beyer K, Frewer L, Madsen C, Botjes E, Crevel RW, van Ree R. Allergy 2007;62(7):717-22.

3) A framework for measuring the social impact of food allergy across Europe: a EuroPrevall state of the art paper. de Blok BM, Vlieg-Boerstra BJ, Oude Elberink JN, Duiverman EJ, DunnGalvin A, Hourihane JO, Cornelisse-Vermaat JR, Frewer L, Mills C, Dubois AE. Allergy 2007;62(7):733-7.

4) The natural history of IgE-mediated cow's milk allergy. Skripak JM, Matsui EC, Mudd K, Wood RA. J Allergy Clin Immunol 2007;120:1172-7.

5) The natural history of egg allergy. Savage JH, Matsui EC, Skripak JM, Wood RA. J Allergy Clin Immunol 2007;120:1413-7.

6) IgE-mediated food allergy diagnosis: Current status and new perspectives.

Asero R, Ballmer-Weber BK, Beyer K, Conti A, Dubakiene R, Fernandez-Rivas M, Hoffmann-Sommergruber K, Lidholm J, Mustakov T, Oude Elberink JN, Pumphrey RS, Stahl Skov P, van Ree R, Vlieg-Boerstra BJ, Hiller R, Hourihane JO, Kowalski M, Papadopoulos NG, Wal JM, Mills EN, Vieths S. Mol Nutr Food Res. 2007; 51:135-47.

7) Early clinical predictors of remission of peanut allergy in children. Ho MH, Wong WH, Heine RG, Hosking CS, Hill DJ, Allen KJ. J Allergy Clin Immunol 2008;121:731-6.

8) Thresholds for food allergens and their value to different stakeholders. Crevel RW, Ballmer-Weber BK, Holzhauser T, Hourihane JO, Knulst AC, Mackie AR, Timmermans F, Taylor SL. Allergy 2008;63(5):597-609.

9) Clinical characteristics of soybean allergy in Europe: a double-blind, placebo-controlled food challenge study. Ballmer-Weber BK, Holzhauser T, Scibilia J, Mittag D, Zisa G, Ortolani C, Oesterballe M, Poulsen LK, Vieths S, Bindslev-Jensen C. *J Allergy Clin Immunol.* 2007;119:1489-96.

10) Timing of solid food introduction in relation to eczema, asthma, allergic rhinitis, and food and inhalant sensitization at the age of 6 years: results from the prospective birth cohort study LISA. Zutavern A, Brockow I, Schaaf B, von Berg A, Diez U, Borte M, Kraemer U, Herbarth O, Behrendt H, Wichmann HE, Heinrich J; LISA Study Group. *Pediatrics* 2008;121(1):e44-52.

11) Probiotics in infants for prevention of allergic disease and food hypersensitivity. Osborn DA, Sinn JK. *Cochrane Database Syst Rev* 2007 Oct 17; (4):CD006474.

12) Probiotics in infants for prevention of allergic disease and food hypersensitivity. Osborn DA, Sinn JK. *Cochrane Database Syst Rev* 2007 Oct 17; (4):CD006475.

13) Effects of early nutritional interventions on the development of atopic disease in infants and children: the role of maternal dietary restriction, breastfeeding, timing of introduction of complementary foods, and hydrolyzed formulas. Greer FR, Sicherer SH, Burks AW. *Pediatrics* 2008;121:183-91.

14) Specific oral tolerance induction in food allergy in children: efficacy and clinical patterns of reaction. Staden U, Rolinck-Werninghaus C, Brewe F, Wahn U, Niggemann B, Beyer K. *Allergy* 2007;62:1261-9.

15) Egg oral immunotherapy in nonanaphylactic children with egg allergy. Buchanan AD, Green TD, Jones SM, Scurlock AM, Christie L, Althage KA, et al. *J Allergy Clin Immunol* 2007;119:199-205.

16) Traditional Chinese herbal remedies for asthma and food allergy. Li XM. *J Allergy Clin Immunol* 2007;120:25-31.

17) Eosinophilic esophagitis in children and adults: a systematic review and consensus recommendations for diagnosis and treatment. Furuta GT, Liacouras CA, Collins MH, Gupta SK, Justinich C, Putnam PE, et al. *Gastroenterology* 2007;133:1342-63.

18) Allergenicity assessment of genetically modified crops--what makes sense? Goodman RE, Vieths S, Sampson HA, Hill D, Ebisawa M, Taylor SL, van Ree R. *Nat Biotechnol.* 2008 26:73-81.

5. Current European/International projects

EuroPrevall (www.euoprevall.org)

EU-funded multidisciplinary integrated project involving 17 European member-states, Switzerland, Iceland, and Ghana.

This project has seven main objectives:

- 1) Establish the prevalence of food allergies in adults and children, and the patterns of reactivity to the five main allergenic foods across Europe.
- 2) Identify new and emerging food allergies in the Eastern Europe and the Far East
- 3) Investigate the relationship between genetic and environmental factors.

- 4) Provide a library of highly characterized, authentic food allergens.
- 5) Develop novel diagnostic and predictive tools/methods.
- 6) Provide information regarding the effect of the food matrix and the role of food processing in modulating the allergenic properties of foods.
- 7) Ascertaining the socioeconomic impact and cost of food allergies, and their treatments, to the European Community.

Published Task Forces:

- [Controversial Aspects of Adverse Reactions to Food](#)
Allergy 1999;54:27-45
- EAACI Position Paper : [Standardization of food challenges in patients with immediate reactions to foods](#)
Allergy 2004;59:690-697
- EAACI / GA²LEN Position Paper: [Present status of the atopy patch test](#)
Allergy 2006;61:1377-1384
- EAACI / GA²LEN Position Paper: [Eczematous reactions to food in atopic eczema](#)
Allergy 2007;62:723-8
- EAACI Position Paper : [The management of anaphylaxis in childhood](#)
Allergy 2007;62:857-71

6. Tips and Resources

- Communication between clinical allergologists/immunologists and scientists/researchers in the field of food allergy. (<http://www.eaaci.net/site/content.php?l1=91&sel=159>)
- Genetically Modified Organisms and Food Allergy (2000).
(<http://www.eaaci.net/site/position2k.htm>)
- DBPCFC - Challenge Meal Recipes (2001)
 - German Recipes (<http://www.eaaci.net/media/HTM/G/480.htm>)
 - Italian Recipes (<http://www.eaaci.net/media/HTM/I/481.htm>)
 - Swiss Recipes (<http://www.eaaci.net/media/HTM/S/479.htm>)
- Useful information
 - The Food Allergy and Anaphylaxis Network (<http://www.foodallergy.org>)
 - International Food Information Council (<http://ific.org>)
- Food allergens
 - The informall food allergen database (<http://www.informall.eu.com>)
 - The Food Allergy Resource and Research Program (<http://www.farrp.org>)
 - Official IUIS Allergen Nomenclature Subcommittee database (<http://www.allergen.org>)
 - The AllFam database (<http://www.meduniwien.ac.at/allergens/allfam/about.html>)
 - Allergome database (<http://www.allergome.org>)