

Food allergy and intolerance

An overview of our research and work



The Agency's role in food allergy and intolerance

Allergy and intolerance to foods are significant health issues in the UK and internationally. Around 1 to 2% of adults and 5 to 8% of children in the UK have a food allergy, with up to 1 in 55 children having a peanut allergy. An estimated 1 in 100 people have coeliac disease, an autoimmune response to gluten proteins found in a number of cereals. In addition, some people need to avoid certain foods because of a food intolerance, which differs from food allergy because it does not generally involve the immune system.

In line with its overall strategy, the Food Standards Agency's objective in this area is to ensure the availability of safe food for consumers affected by these conditions. This is achieved through a range of activities aimed at advising and protecting food allergic and food intolerant individuals and assisting them in making informed choices about the foods they purchase and eat.

The Agency addresses these objectives through four key strands of activity:

- 1) negotiating and implementing legislation to improve statutory controls on the labelling of food allergens
- 2) providing guidance to industry and enforcement bodies to encourage greater awareness and control of food allergens through the food supply chain
- 3) providing advice about food allergy and intolerance to consumers, carers and other stakeholders
- 4) commissioning scientific and consumer research on food allergy and intolerance to develop an improved understanding of the important issues and to ensure that policies are based on robust scientific evidence (see Figure 1)

Figure 1: How research informs our policies and advice



Food allergen labelling

According to EU legislation 14 food allergens have to be clearly declared by reference to the source allergen whenever they, or ingredients made from them, are used at any level in pre-packed foods, including alcoholic drinks. The list consists of cereals containing gluten, crustaceans, molluscs, eggs, fish, peanuts, nuts, soybeans, milk, celery, mustard, sesame, lupin and sulphur dioxide at levels above 10mg/kg or 10 mg/litre.

However, from December 2014 there will be additional requirements that food business operators will need to comply with. The Food Information Regulation for Consumers adds new requirements for these allergens to be emphasised within the ingredients list. Food businesses can choose the method they want to use to emphasise the information (for example by listing the allergens in bold) as shown in the example below:

Old

INGREDIENTS: Water, Carrots, Onions, Red Lentils (4.5%) Potatoes, Cauliflower, Leeks, Peas, Cornflour, Wheatflour, Salt, Cream, Yeast Extract, Concentrated Tomato Paste, Garlic, Sugar, Celery Seed, Vegetable Oil, Herb and Spice, White Pepper, Parsley.

New

INGREDIENTS: Water, Carrots, Onions, Red Lentils (4.5%) Potatoes, Cauliflower, Leeks, Peas, Cornflour, **Wheat**flour, Salt, **Cream**, Yeast Extract, Concentrated Tomato Paste, Garlic, Sugar, **Celery** Seed, Vegetable Oil, Herb and Spice, White Pepper, Parsley.

In addition to this there will be a requirement to provide information on the 14 allergens when used as ingredients in foods sold without packaging or wrapped on site, such as in restaurants, from bakeries and deli counters. This information can be provided on a label, menu, chalk board or orally by a member of staff.

The Agency liaises closely with industry, enforcement bodies, consumer groups and relevant health professionals. This ensures that food businesses understand and comply with the necessary rules and that food allergic and intolerant consumers have sufficient information to make safe and informed choices.

Further information can be found at:

- <http://food.gov.uk/policy-advice/allergyintol/label/>



Agency-funded research

It is essential that the Agency bases its policies and advice on the best available science. In support of that the Agency has a significant Food Allergy and Intolerance Research Programme which, since 1994, has funded more than 60 research projects to address important policy needs on fundamental, applied, clinical and social aspects of food allergy and intolerance.

Since its inception, the Programme has made significant contributions to enhancing our understanding of food allergy and intolerance which has informed policy and advice. Key scientific advances include:

- provision of robust data on the prevalence of true food allergy (as distinct from perceived food allergy) and sensitisation rates in the UK for a wide range of foods and food products among infants, children and teenagers
- detailed characterisation of kiwi fruit as a significant and rapidly growing cause of food allergy in the UK, which can be severe, especially in children
- identification of the skin as a probable route of exposure for the acquisition of sensitisation to food proteins. The results of these investigations have not only informed new research calls to identify factors that may influence the development of sensitisation in early life, but have also resulted in revised Agency policy in this area and advice to parents
- provision of a detailed characterisation of possible links that may exist between consumption of certain food additives and preservatives and behaviour in children. This

work directly informed consumer advice and formed the basis for wider consideration at an international level

- provision of evidence that food allergic and non-allergic subjects display important differences in immune (T lymphocyte) function. Such differences may – in future – allow the development of novel immunological strategies for identifying susceptible individuals and anticipating disease progression
- improved understanding of the role of IgG (Immunoglobulin G) in allergy and tolerance to common food allergens. In particular, revealing that IgG antibodies to food proteins do not impact on the severity of food allergic reactions and that IgG antibodies cannot be used as reliable markers of food allergy

The current focus

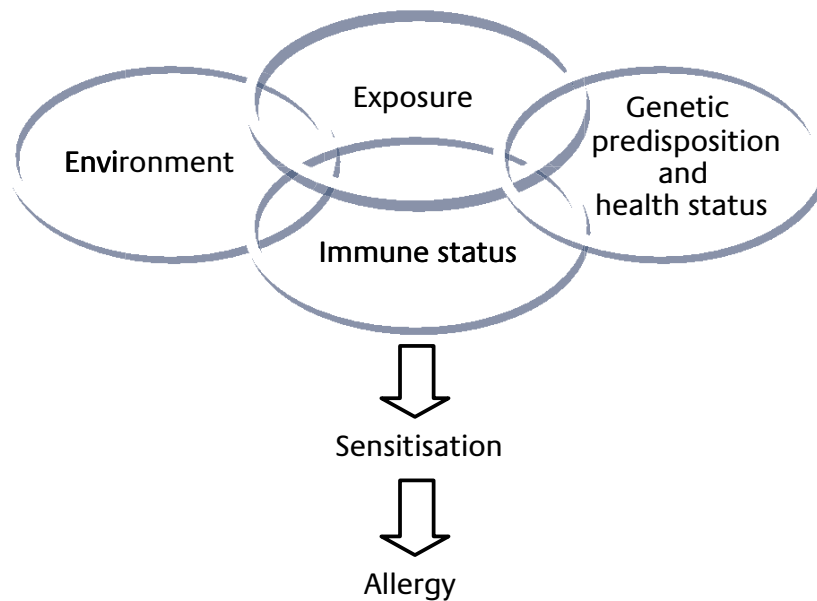
The Agency has identified several important gaps in current understanding of food allergy and intolerance that are relevant for addressing pressing policy needs.

These are being addressed currently, as follows:

1. Investigation of the importance of route and timing of exposure to food allergens in early life on the acquisition of sensitisation, oral tolerance and clinical allergy to foods

The Programme is currently funding research that builds on previous work to investigate how the early life environment (as illustrated in Figure 2 on page 6), and in particular dietary and non-dietary exposures to allergenic foods, might influence the development of sensitisation to food allergens. This will help us to identify more effectively those at risk of developing food allergy, to inform future preventative strategies and to advise consumers.

Figure 2: Some of the factors affecting the development of sensitisation/allergy



Projects that have been funded to address this research need include:



The EAT Study

The EAT study (Enquiring About Tolerance) is a large clinical intervention trial that is seeking to discover whether the early introduction of allergenic foods into the infant diet, alongside continued breastfeeding, results in a reduction in food allergies by three years of age. This will help us understand how the timing and pattern of the introduction of allergenic foods into the weaning diet affects the development of allergies.

Further information about this study can be found at:

- www.eatstudy.co.uk/
- www.food.gov.uk/science/research/allergy-research/allergy-exposure/t07051/



The LEAP Study

The LEAP study (Learning Early About Peanuts) is a randomised clinical intervention study that is seeking to answer the question of whether consumption of peanuts from an early age, among infants at high risk of developing peanut allergy, may in fact prevent the development of food allergy by inducing tolerance. The Agency-funded part of this study is focused on characterising the immunological events that are associated with the development of sensitisation or tolerance to peanuts in children.

Further information about this study can be found at:

- www.leapstudy.co.uk/
- www.food.gov.uk/science/research/allergy-research/allergy-immunology/t07049/

The BASELINE Study

The BASELINE (Babies After SCOPE: Evaluating Longitudinal Impact using Neurological and Nutritional Endpoints) study is a prospective observational study of infants in Ireland that will build on a major international obstetric study, SCOPE. In BASELINE, infants are being monitored until two years of age, when a number of neurological and nutritional endpoints, including the prevalence of food allergy, will be measured. The Agency-funded part of this study is seeking to test the hypothesis that abnormal skin barrier function, which may be genetically determined, predates and predicts food allergen sensitisation.

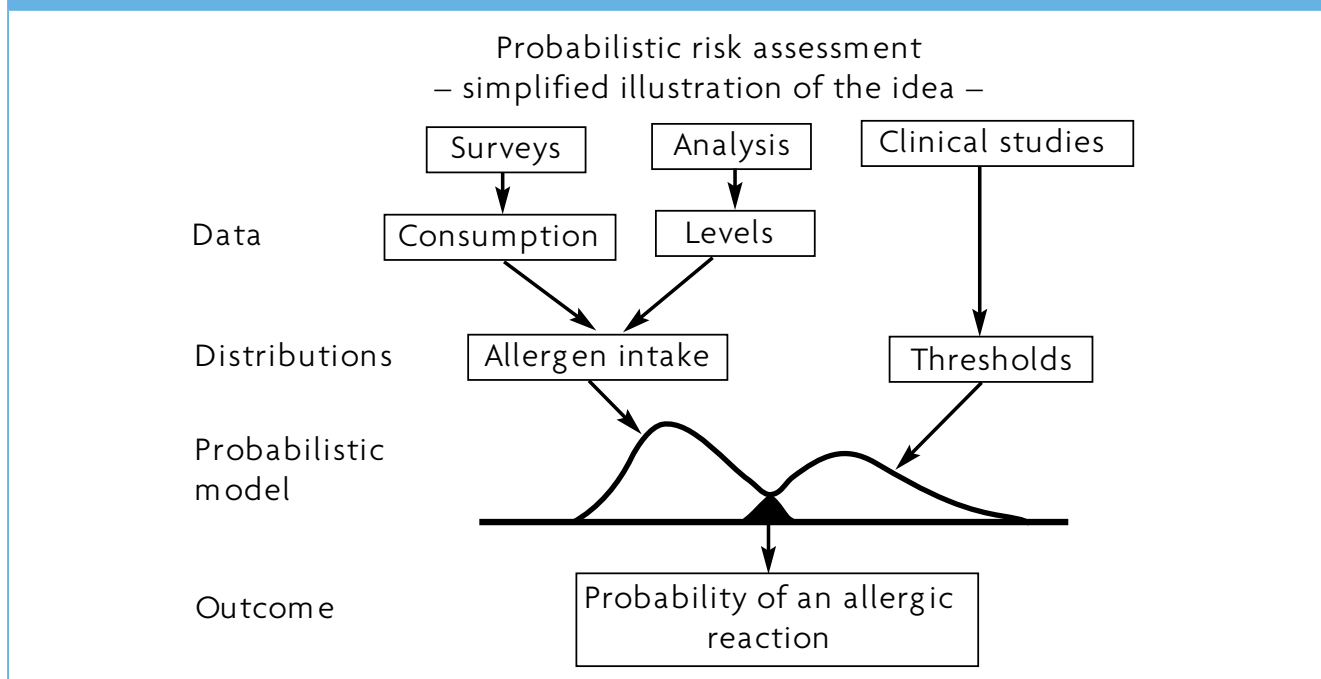
Further information about this study can be found at:

- www.baselinestudy.net/
- www.food.gov.uk/science/research/allergy-research/allergy-exposure/t07060/

2. Development of management thresholds for allergenic foods

An important area of current work for the Programme, and a particular area of policy importance, is the funding of activities to facilitate the derivation of allergen management thresholds or ‘action’ levels. It is intended that such levels, when defined and agreed, could be used by industry and by regulators to guide decisions about the likely risk of allergen cross-contamination in manufactured foods, and to inform risk communication and management strategies. One approach that has been proposed is that management thresholds could be established through probabilistic risk assessment, where the risk of an allergic reaction is based on information about allergen intake and clinical thresholds (see Figure 3).

Figure 3. The probabilistic model estimates the risk of any allergic reaction based on the distribution of food intake and concentration of allergenic food and the distribution of minimum eliciting doses (thresholds) from clinical trials



Projects that have been funded to address this research need include:

The management of food allergens: from threshold doses to analysis in foods

This study has obtained data on threshold doses for allergenic foods (the highest level of an allergen that does not cause a reaction in the food allergic population). The study also ascertained whether available methods of analysis could accurately detect and quantify allergens in foods at or around threshold levels.

The results demonstrated that the minimum eliciting doses that cause objective symptoms vary between the foods investigated. The study also established that current methods can determine the presence, but in general do not quantify accurately, the levels of allergens in foods. In addition, it was found that the level of milk required to elicit a reaction in infants was extremely low and analytical test kits are unable to detect the level of milk protein likely to cause a reaction.

Further information about this study can be found at:

- www.food.gov.uk/science/research/allergy-research/allergy-thresholds/t07062/

Survey of allergen labelling and allergen content of processed foods

This survey aims to gain a better understanding of the types of allergen advisory labelling present on pre-packed processed foods sold in the UK. It also aims to quantify the level of allergens that may be present in these foods as a result of cross-contamination and examine whether the type of advisory labelling used relates to the level of allergen present.

Five hundred pre-packed processed food products have been purchased in duplicate from different types of food retail outlets across the

UK. Products with allergen advisory statements and an equal number of comparable products without such statements have been purchased. Samples will be tested for the unintentional presence and quantity of one or more of the following four major food allergens – milk, gluten, peanut and hazelnut.

Further information about this study can be found at:

- www.food.gov.uk/science/research/allergy-research/allergy-thresholds/fs241038/



TRACE
PEANUT STUDY

The TRACE Study

The TRACE study is a randomised cross-over trial investigating exactly how much peanut is able to cause an allergic reaction in adults with a peanut allergy. It is also seeking to establish whether an individual's threshold level changes in the presence of two extrinsic factors – exercise and stress (in the form of sleep deprivation).

Further information about this study can be found at:

- www.tracestudy.com/
- <http://food.gov.uk/science/research/allergy-research/allergy-thresholds/fs241037/>

3. Improving consumer understanding of labelling of allergens in foods and communication

Gaining an insight into the information needs of food allergic and intolerant consumers and the particular challenges and risks that they face continues to be an important area of work.

The Programme continues to commission research aimed at understanding the factors influencing food choices of allergic consumers and their carers and their information needs. In addition, existing government advice and consumer guidance is reviewed as necessary to ensure that it is updated and based on the latest scientific evidence and is accessible for both the allergic consumer and health professionals.

Future research

In November 2012 the Programme was reviewed and a number of recommendations for future research were made. As a result the Agency has identified a number of key areas that it will be seeking to support.

These include:

- **Provision of information and advice to consumers and industry, particularly with regard to the Food Information for Consumers Regulation:** Research will be undertaken to evaluate the understanding and impact of the new requirements of the

Regulation among consumers. Particular focus will be given to the provision of food allergy information in catering establishments and understanding consumer choices when eating out.

- **Adult food allergy:** Research will be undertaken in the field of adult food allergy. Initially a workshop will be held to identify the key questions that need to be addressed in this area. Such questions might include: the prevalence and characteristic of food allergy in adults; investigating why individuals develop food allergies later in life, including the routes of exposure that are relevant; and, why individuals acquire allergy to foods that they have previously eaten for long periods without ill effect.
- **Food intolerance:** The Programme has in previous years focused on food allergy, and yet little is known about food intolerance. A workshop will be held to identify possible research that could be undertaken in this area to improve scientific understanding.

Further information on the recent review of the Programme in 2012 can be found at:

- <http://food.gov.uk/science/research/allergy-research/more-allergy-research/allergy-prog-review-2012>



Further information

For research

Summaries of individual projects can be found at:

- www.food.gov.uk/science/research/allergy-research/

Full reports of all completed projects can be freely accessed via the Agency's open repository for research reports at:

- www.foodbase.org.uk

For consumers and businesses

Information and advice for consumers, enforcers and businesses can be found at:

- www.nhs.uk/Livewell/Allergies/Pages/Foodallergy.aspx
- www.food.gov.uk/policy-advice/allergyintol/

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