

The effect of extrinsic factors on food allergy (ongoing)

Research programme [Food allergy and intolerance research --](#)

Study duration April 2012 to August 2016

Project code FS241037

Conducted by Cambridge University Hospital NHS Trust

Background

It is known there is significant intra-individual variation in the severity of food allergic reactions following exposure to the same amount of allergen on different occasions. This is thought to be, in part, the result of the influence of certain extrinsic factors such as alcohol, exercise, asthma and stress. It is understood that these and/or other factors may increase the sensitivity of allergic individuals to a set amount of food to which they are allergic, resulting in more severe reactions. Alternatively, these factors may influence the lowest dose that an individual may react to. Little is known about the scale or mechanism of these factors which makes it difficult to take them into account when undertaking risk assessments of food allergens. There is therefore a need to better understand the effect of these factors on the severity and threshold dose of reactions (that is, the highest level of an allergen that does not cause a reaction in the food allergic population), in order to ensure that risk assessments of food allergens are accurate and meaningful.

This study will help to inform work the Agency is undertaking to develop management threshold levels (or 'action levels') for the unintentional presence of allergens in food to inform labelling and risk management/communication decisions.

Research Approach

This is a randomised cross-over clinical trial that is being conducted by a UK consortium comprising four organisations, including three clinical sites. Cambridge University Hospital NHS Trust is the coordinating centre for the study. Peanut allergic individuals will be recruited from clinical centres located in Cambridge (Addenbrooke's Hospital) and London (Royal Brompton and St Mary's Hospital).

One-hundred adults with a diagnosed peanut allergy will be recruited to undergo a total of four food (peanut) challenges at 12 week intervals – a baseline peanut double-blind placebo controlled food challenge, followed by three further challenges in a random order, comprising one repeat baseline challenge, and two further challenges with different extrinsic factors thought to have a possible influence on the thresholds and/or severity of reaction. The extrinsic factors under investigation will be exercise and stress (via sleep restriction).

After drop-outs, it is anticipated that complete data for all four challenges will be available for 72 subjects. This will ensure that the study has a sufficient level of statistical power for the primary data analyses. Each clinical centre will perform both baseline and interventional challenges, and both extrinsic factors will be investigated at each centre to ensure diversity of sampling. Pilot work will determine the feasibility of studying extrinsic factors using healthy volunteers to study exercise and sleep restriction. The primary measurement for each participant will be the amount of peanut that causes an allergic reaction during each challenge. This is known as the

participant's baseline challenge threshold (mg peanut protein) and will be recorded for all four challenges. The data will be used primarily to model the variability of challenge thresholds over time within individuals, as a result of repeat challenges, and to examine how the extrinsic factors shift the dose response curve.

The University of Manchester will manufacture and distribute standardised peanut challenge meals to each clinical centre. They will also develop an online e-database adapted from the Allerge-e-lab concept that will provide a secure environment for real-time in-clinic collection of patient data (such as clinical history, test results, and challenge outcomes). The e-database will also facilitate retrospective analysis with relevant EuroPrevall data sets, in particular the further development and application of a numeric severity score.

The University of Cambridge (Centre for Applied Medical Statistics) will undertake the main and final analysis.