



# Peanut Allergy – Summary of Current Research



[Updated February 2008]

International research into peanut allergy is being directed in three main areas:

1. Removing the allergenic properties from peanuts
2. Determining what causes some people to become allergic to peanuts
3. Creating a vaccine or long-term treatment for peanut-sensitive individuals

## Non-Allergenic Peanuts?

Research is continuing in the United States to develop non-allergenic peanuts using both traditional breeding techniques and gene modification. Professor Peggy Ozias-Akins, from the University of Georgia, is being funded by the US peanut industry to develop a peanut plant free of the three major proteins blamed for most allergic reactions. Dr Soheila Maleki, from the USDA Agricultural Research Service, has found a natural mutation of the NC-4 peanut variety which lacks the Ara h2 protein. Dr Hortense Dodo and Dr Koffi Konan from Alabama's A&M University have used a process called RNA Interference to silence the same gene. At the University of Florida Professor Maria Gallo is also trying to grow peanuts without the proteins that trigger allergies. In 2007 North Carolina A&T State University food scientist Mohamed Ahmedna claimed to have found a way to eliminate all traces of allergen from harvested peanuts however the processed peanuts have not yet been tested on humans

## Early Feeding of Peanuts?

London researchers headed by Professor Gideon Lack have begun a seven-year study to determine whether peanut allergy can be avoided through the early introduction of peanuts to the diets of "at risk" children. The project is investigating whether early oral exposure to peanuts may prevent the development of an allergy. They believe sensitisation may be occurring through non-oral exposure, such as the use of peanut oil in skin preparations. Dr Wesley Burks, at North Carolina's Duke University, is also working on a trial which he hopes will reduce the severity of peanut allergy reactions. Patients are first exposed to a tiny amount of raw peanut - one-thousandth of one nut. This amount is gradually increased to a whole peanut.

## Parental consumption?

A cohort study conducted by Dr Carina Venter and Dr Tara Dean from the University of Portsmouth published in 2007 found that maternal consumption of peanuts during pregnancy and breastfeeding was not associated with peanut sensitisation in infants. They called for a review of the 1998 UK Department of Health advice that women should avoid eating peanuts during pregnancy and breastfeeding. However at almost the same time, Professor Robert Wood, from the John Hopkins School of Medicine, reviewed 18 studies and recommended that peanuts and tree nuts should be avoided by mothers and a 2007 study by the Imperial College of London suggested that parents who eat a lot of peanuts may be exposing babies to peanut oil and dust which could enter the body via the skin and nose, priming the immune system and leading to an allergic response the first time the child eats peanuts itself. Research is continuing.





### Enzyme deficiency?

Canadian researcher Dr Peter Vadas has found that people who suffer anaphylaxis have higher levels of a Platelet Activating Factor (PAF) than people who do not get such a severe reaction. They also tend to have higher levels of an enzyme Platelet Activating Factor Acetylhydrolase (PAF-AH) that degrades PAF.

### Drug therapy - in limbo?

There has been no news from bio-tech company Novartis on its plan to recommence research on the asthma drug Xolair® (omalizumab) that had promised to minimise the allergic reaction in people with peanut allergy. Phase 2 trials were cancelled in early 2006 after several participants suffered a severe reaction while their allergy levels were being assessed before the drug was actually given to them. Xolair works similarly to TNX-901 which has already demonstrated beneficial effects. Development on TNX-901 was halted when the rights to develop it were challenged in a legal dispute.

### Vaccine?

At North Carolina's Duke University Medical Centre researchers are experimenting with methods of altering the peanut protein which attaches to immune-system T cells in the body, triggering production of the antibody immunoglobulin E (IgE). These experiments could lead to a vaccine against peanut allergy in which the altered protein could be given to allergy sufferers to desensitise them to peanuts. In 2007, a review of prospects for specific therapy carried out by Australian researchers Maria de Leon, Jennifer Rolland and Robyn O'Hehir found a T-cell targeted approach offered prospects for effective and safe specific treatment but more research was necessary.

### Enzyme Added to Peanut Meal?

Arkansas food technologist Si-Yin Chung is continuing his research into a natural enzyme, polyphenol oxidase (PPO), which when added to ground-up peanuts may block the allergenic properties of the proteins in the nuts. PPO (the same enzyme that makes bananas turn brown after they are cut) alters the structure of the peanut proteins, preventing them from binding with the antibodies and preventing an allergic reaction.

For more information on any of the above research, please visit the PCA website: [www.pca.com.au](http://www.pca.com.au)

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