

## SYNOPSIS

- Children at 8 years of age were recruited from a population-based birth cohort and allocated into four equally sized (n = 50) groups based on sensitization pattern to peanut and birch.
- Peanut-symptomatic children were based on reported symptoms from a questionnaire.
- IgE sensitization to peanut and birch pollen extract was shown by ImmunoCAP® (Phadia AB, Uppsala, Sweden).
- IgE sensitization to peanut allergen components (Ara h 1, Ara h 2, Ara h 3, rAra h 8), birch pollen components (Bet v 1, Bet v 2) were analyzed by an in-house experimental semi-quantitative microarray assay based on a microspot multiplex technique.
- Sensitization to the storage proteins were much more common (39-73% vs. 1-5%) in children with clinical symptoms compared to tolerant children.

Citation: *Asarnoj A et al. IgE to peanut allergen components: relation to peanut symptoms and pollen sensitization in 8-year-olds. Allergy 2010;65:1189-95.*

## SYNOPSIS

- Crude ovomucoid, ovalbumin, conalbumin and lysozym were purchased from Sigma-Aldrich.
- In-house developed monoclonal antibodies to ovomucoid, ovalbumin, conalbumin and lysozym were used in affinity adsorption chromatography.
- The chimeric human/mouse IgE was developed in-house from the variable domain of monoclonal mouse antibodies and the constant domain of human IgE.
- Serum from egg white sensitized patients (n = 83) were tested by ImmunoCAP® experimentally coupled with crude or purified allergen components.
- There was a significant (p<0.001) decrease in serum IgE level to ovomucoid, ovalbumin and conalbumin when using highly purified components.
- There was a significant (p<0.01) decrease in prevalence positive tests to ovomucoid and conalbumin when highly purified components were used.
- The IgE level to purified ovalbumin was significantly higher compared to the other components (p<0.0001).

Citation: *Everberg H et al. Affinity purification of egg-white allergens for improved component-resolved diagnostics. Int Arch Allergy Immunol 2010;154:33-41.*

## SYNOPSIS

- Children (n=122) with soy allergy were recruited to the study and followed up regularly (median = 5 y, range 1-19 y)
- Most common symptoms were gastrointestinal > skin related > eczema > lower respiratory > upper respiratory.
- Only 25% of the children had outgrown their allergy at 4 years of age and 31% had not outgrown their allergy until the age of 10 years.
- Eleven patients showed a late-onset soy allergy at 10 years (median age) of age. Those were excluded in calculating tolerance development.
- Serum IgE to soy extract was measured by ImmunoCAP®.
- There was a correlation between IgE antibody levels to soy and peanut (r = 0.69).
- At the age of 6 years 45% of the children with a peak level of IgE antibodies to soy between 10-49.9 kU<sub>A</sub>/l had developed tolerance.

Citation: *Savage J et al. The natural history of soy allergy. J Allergy Clin Immunol 2010;125:683-6.*

## IgE sensitization to peanut storage proteins (Ara h 1-3) is more related to clinical symptoms to peanut than sensitization only to the birch Bet v 1 homolog (Ara h 8)

The authors have recently shown that peanut sensitized children in a birch rich area, and with concomitant birch pollen sensitization, reported less clinical symptoms to peanut than children sensitized to peanut alone. In the present study they investigated if this clinical difference was due to sensitization to different allergen components in peanut extract.

Serum IgE antibodies to different peanut allergen components were analyzed by a microarray technique in 8 years old children. IgE sensitization to the storage proteins (Ara h 1, Ara h 2 and/or Ara h 3) was most common (70% vs. 36%) in children sensitized to peanut without concomitant sensitization to birch. Clinical symptoms to peanut were also more frequent (74% vs. 43%) in these children. Sensitization to Ara h 1 and/or Ara h 3 was always associated to Ara h 2 sensitization. Children sensitized to all three storage proteins reported clinical symptoms more frequently (97% vs. 70%, p=0.016) than children sensitized to only Ara h 2. Children sensitized to the birch Bet v 1 homolog Ara h 8 reported less clinical symptoms (18% vs. 87%, p<0.001) than children sensitized to storage proteins.

In conclusion the authors show that sensitization to peanut storage proteins shows a higher association to clinical symptom than sensitization to the birch pollen related allergen component Ara h 8 (Bet v 1 homolog).

## Highly purified allergen components increase test specificity in measurement of IgE antibodies to ovomucoid and conalbumin

It has recently been shown that IgE sensitization to ovomucoid can be used as a marker for allergy to heated egg since the allergen is heat-resistant in contrast to the other major egg white allergen components. Egg white is mainly (80%) composed of four allergen components (ovomucoid, ovalbumin, conalbumin, lysozyme) but commercial preparations have been shown to be impure.

The aim of this study is based on the clinical need to improve purity of these allergen components to increase sensitivity and specificity of used CRD (Component Resolved Diagnostic) *in vitro* tests.

Monoclonal chimeric human/mouse IgE antibodies to these four allergen components bound to experimental ImmunoCAP test were developed to detect impurities. It was shown that commercial ovomucoid and conalbumin were contaminated with lysozyme. Ovalbumin was contaminated with ovomucoid and conalbumin. When testing serum from egg white sensitized patients the prevalence of IgE antibodies to ovomucoid and conalbumin decreased with 20-21% when highly purified components were used. There was also a 39-51% decrease in mean concentration of serum IgE to these allergen components in positive sera.

The authors conclude that it is important to use highly affinity purified egg white allergen components to avoid false high test results and increase specificity.

## The changes and peak values of serum IgE antibodies to soy extracts are related to tolerance development in childhood soy allergy

The authors state that there is only limited documentation about the natural history of soy allergy despite it is a rather common food allergy in childhood. The aim of the present publication was to study the possibility to use the change and level of serum IgE antibodies to soy extract to predict the development of tolerance.

A large group of soy allergic children with a median onset of allergy symptom at 7 months of age was studied and followed up for 5 years (median).

Children with persistent soy allergy had a higher IgE level to soy in the first 2 years than those who developed tolerance (6.7 vs. 3.8 kU<sub>A</sub>/l; p<0.01). Furthermore they showed a gradual increase that peaked around age 8 years. Children who developed tolerance showed an increase that peaked around age 3 years and then decreased.

Children with higher peak value of IgE antibodies had a slower rate of tolerance development. At the age 6 years 59% of children with a peak value between 5-9.9 kU<sub>A</sub>/l had developed tolerance compared to only 18% of those with a level of 50 kU<sub>A</sub>/l or more.

The authors conclude that the levels of IgE antibodies to soy extract are useful predictors of outgrowing soy allergy.