

SYNOPSIS

- Soybean sensitized Japanese children (n=74, age range 0.6-16.3 years, median age = 2.3 years) were recruited.
- They were divided into non-symptomatic (n= 41) children and children with mild (n=19) and severe (n=14) symptoms.
- IgE sensitization was measured by ImmunoCAP® (Phadia Laboratory Systems, Thermo Fisher Scientific, Uppsala, Sweden) and a multiplex technique to soybean extract, soy storage proteins (Gly m 5 and m 6), soy Bet v 1 homolog (Gly m 4), soybean trypsin inhibitor and agglutinin, CCDs, timothy profilin (Phl p 12), and peach LTP (Pru p 3).
- The levels of IgE to the storage proteins correlated ($r = 0.86/0.89$; Gly m 5/6) to the IgE levels to soybean extract.
- Sensitization to the tree pollen related component Gly m 4 was low and did not differ between symptomatic and non-symptomatic children (21% vs. 20%).

Citation: Ito K et al. IgE to Gly m 5 and Gly m 6 is associated with severe allergic reactions to soybean in Japanese children. J Allergy Clin Immunol 2011 ;128:673-5.

The level of IgE to the soybean storage protein Gly m 5 is correlated to the risk of severe symptoms in childhood soybean allergy

In recent years it has been shown that food allergy to soybean based foods can be caused by sensitization to storage proteins in early childhood or as a cross-reaction to PR 10 (Bet v 1 homologous) proteins from tree pollen later in life. The storage protein related reaction is a much more severe disease than the pollen related. There is a clinical need to predict the risk of severe reactions in these children. The aim of this study was to evaluate the usefulness of measuring IgE sensitization to different soybean allergen components and relevant cross-reacting components in soybean sensitized children to predict the risk of symptomatic allergy and the severity.

All but one child (non-symptomatic) were sensitized ($\geq 0.1 \text{ kU}_A/l$) to soybean extract and the storage proteins Gly m 5 and Gly m 6. The risk to have symptoms increased with the level of IgE sensitization to Gly m 5 and soybean extract with an OR of 1.48-fold (Gly m 5) and 1.51-fold (extract) per logarithmic unit increase. There was a significant higher sensitization to Gly m 6 ($p < 0.5$), Gly m 5 ($p < 0.01$) and soybean extract ($p < 0.001$) in patients with severe symptoms compared to non-symptomatic patients.

The authors conclude that the levels of sensitization to the storage proteins are associated to severe symptoms. They suggest the use of allergen components before the extract since results from extract could be confounded where cross-reacting sensitizing exists.

SYNOPSIS

- Adult patients with anaphylactic reactions (n=17; age range 15-64 years) or skin reactions (n=10; age range 16-72 years) after ingestion of wheat were recruited.
- Thirteen (13/17) patients got anaphylactic reactions after exercise (WDEIA).
- Serum IgE antibodies to ω -5 gliadin and wheat extract were measured by ImmunoCAP® using $\geq 0.35 \text{ kU}_A/l$ as a cut-off.
- Half of the patients with skin reactions had total IgE levels above 1,000 kU/l, but only one of the seventeen patients with anaphylactic reactions.

Citation: Park HJ et al. Diagnostic Value of the Serum-Specific IgE Ratio of ω -5 Gliadin to Wheat in Adult Patients with Wheat-Induced Anaphylaxis. Int Arch Allergy Immunol 2011;157:147-50.

The IgE ratio of ω -5 gliadin to wheat extract showed a 100% sensitivity and specificity for anaphylactic reactions in wheat allergic adults

Serum IgE to ω -5 gliadin has been shown to be a valuable diagnostic marker of wheat allergy with special focus on wheat-dependent exercise-induced anaphylaxis (WDEIA) and wheat-induced anaphylaxis (WIA). However, the authors point at the clinical need to develop a simplified diagnostic routine to predict these severe systemic reactions in adults to replace food challenge tests. The aim of the present study was to evaluate the usefulness of IgE sensitization to ω -5 gliadin and wheat extract to distinguish adult patients with anaphylactic reactions to wheat from patients with skin reactions.

All patients with anaphylactic reactions were sensitized to ω -5 gliadin, but only 20% of patients with skin reaction. The opposite was shown for sensitization to wheat extract where all patients with skin reaction were sensitized, but only 47% of patients with anaphylactic reactions. The authors used this observed phenomenon and calculate a log-transformed allergen-specific IgE ratio of ω -5 gliadin to wheat extract and found a cut-off value in ROC analysis at 0.3 with a 100% sensitivity and specificity.

The authors conclude that the ratio of IgE sensitization of ω -5 gliadin to wheat extract could be a useful marker for the diagnosis of anaphylactic reaction to wheat without using food challenge tests.

SYNOPSIS

- Sera were selected from 1322 mite allergic patients with respiratory symptoms and IgE sensitization to house dust mite extract (ImmunoCAP® or skin prick test).
- Quantitative serum IgE to house dust mite and total serum IgE were measured by ImmunoCAP.
- Sera from Der p 10 (tropomyosin) positive (n=35) and Der p 10 negative (n=27) patients were further analyzed for their sensitizing profile to mite allergen components.
- Serum IgE to Der p 10 and 5 other mite allergen components (Der p 1, 2, 5, 7, 21) were screened by a non-denaturing RAST-based dot-blot assay.
- Five patients showed sensitization to Der p 10 alone, which was shown by inhibition studies to be the sensitizing agent.

Citation: Resch Y et al. Molecular characterization of Der p 10: a diagnostic marker for broad sensitization in house dust mite allergy. Clin Exp Allergy 2011;41:1468-77.

IgE to Der p 10 in mite allergic patients is a biomarker of sensitization to other mite allergen components besides Der p 1 and Der p 2, and might offer a new clinical utility in immunotherapy

Respiratory allergy to house dust mites is a common allergy world-wide and more than 90% of those have IgE antibodies to the allergen components Der p 1 and Der p 2. More than 20 other mite components have been described. Routine tests to measure sensitization to the mite component tropomyosin (Der p 10) are available since it has been shown to be associated to shellfish food allergy. The aim of the present study was to investigate the prevalence of Der p 10 sensitizations among mite allergic patients, and study the sensitization profiles to 5 other house dust mite components.

Sensitization to Der p 10 was shown in 15.2% of a large population of mite allergic patients. The Der p 10 positive patients, compared to negative, had higher IgE level to mite extract (class 5 vs. class 3; $p = 0.018$) and higher total IgE (546.5 vs. 160 kU/l, $p < 0.000$). More than half of the Der p 10 positive patients were sensitized to at least 4 of the 5 other components in contrast to Der p 10 negative who were sensitized predominantly (77.8%) to one or two of the components. The sensitization frequency to the components Der p 5, Der p 7 and Der p 21 was 4-5 times higher in the Der p 10 positive population.

The authors conclude that sensitization to Der p 10 is a biomarker of a broader sensitization to other house dust mite allergen components, which might be of clinical relevance in immunotherapy mainly focused on Der p 1 and Der p 2.