

SYNOPSIS

- Pre-school children (n=2551) at 4 years of age were selected from ongoing prospective birth cohort (BAMSE study).
- Questionnaires on symptoms were sent out with a response rate of 91%.
- Allergen-specific IgE was measured with ImmunoCAP™ (Phadia AB, Uppsala, Sweden).
- Sera from all children were screened with Phadiatop® (birch, timothy, mugwort, mite, Cladosporium, cat, dog, and horse) and a multi-allergen food test, fx5 (egg white, milk, fish, wheat, peanut and soybean) and the positive ones were further analyzed to each ingredient allergen.
- 24.1% were sensitized to any of the tested allergens and 11.2% were sensitized to at least one of the three pollens.
- Only 2 children were sensitized to mugwort as the only pollen.
- Peanut sensitization was shown in 90% of patients sensitized to all three pollen groups.
- Peanut sensitization was only 19% and 14%, respectively, in children sensitized only to birch or timothy, of the pollen groups.

Citation: Ghunaim N et al. Sensitization to different pollens and allergic disease in 4-year-old Swedish children. *Clin Exp Allergy* 2006;36:722-7.

Birch pollen sensitization, compared to timothy sensitization, in pre-school children is associated to sensitization to other inhalant and food allergens as well as expression of allergic diseases

Pre-school children at 4 years of age were screened for IgE sensitization to common inhalant (Phadiatop®) and food allergens (fx5). The aim was to relate the profile of pollen sensitization (birch, timothy and mugwort) to frequency of sensitization to animal dander, food allergens and to clinical allergic diseases. In this population, 24.1% were sensitized to any of the tested allergens and 11.2% were sensitized to the pollens. In the pollen sensitized population 46.7% were sensitized to birch alone compared to 19.7% sensitized to timothy alone and 33% sensitized to two or more of the pollen groups.

Children sensitized to all three pollen groups demonstrated a significant (p<0.05) higher frequency of sensitization to animal dander (cat and dog), food allergens and higher frequency of allergic diseases compared to children sensitized to timothy alone. Pollen sensitized children sensitized only to birch showed a significant higher frequency of symptoms (60%) of allergic diseases compared to children sensitized only to timothy (37%). Furthermore, children sensitized only to birch showed a two to three times higher (p<0.05) frequency of sensitization to cat, dog, horse and mould than children sensitized to timothy alone.

The authors conclude that birch is the dominating cause of pollen sensitization in this age group in Sweden and is associated with sensitization to other inhalant and food allergens as well as expression of allergic disease.

SYNOPSIS

- Cherry-allergic patients were recruited from central Europe (n=121) and Spain (n=22).
- Allergen-specific IgE levels to natural cherry extract and to an equimolar mixture of rPru av 1, rPru av 3 and rPru av 4 were determined using ImmunoCAP™.
- 98% of the central Europe population was sensitized to birch in contrast to none among the Spanish patients.
- Spanish patients had significantly (p<0.0001) more severe symptoms.
- Mono-sensitization to rPru av 1 was found in 75% in the central Europe population.
- Mono-sensitization to rPru av 3 was found more than 80% of Spanish patients.
- The sensitivity was over 95% using the mixture of recombinants.

Citation: Reuter A et al. A critical assessment of allergen component-based in vitro diagnosis in cherry allergy across Europe. *Clin Exp Allergy* 2006;36:815-23.

ImmunoCAP™ carrying recombinant cherry allergens rPru av 1, 3 and 4 is a highly improved diagnostic tool for detecting sensitization in 95% of cherry-allergic patients

Allergenicity of protein extracts derived from fruits is often partly destroyed due to inherent enzyme activities in the extracts. This is a particular problem for the major cherry allergen Pru av 1, belonging to the Bet v 1 homology group. The aim of this study was to evaluate the possibility to overcome the problem by using a mixture of relevant recombinants (rPru av 1, rPru av 3, and rPru av 4) to mimic the natural cherry allergens. ImmunoCAP™ with coupled natural cherry extract or a mixture of the recombinants were evaluated in cherry-allergic patients. Patients were recruited from central Europe and Spain since they are known to have differences in their sensitization pattern. When the recombinant-based ImmunoCAP was used the sensitivity of the test increased to 96% (central Europe) and 95% (Spain) from 65% and 86% using extract-based tests. When testing individual recombinants 96% of the central Europe population was sensitized to rPru av 1 (Bet v 1 homologue) compared to 5% in the Spanish population. In contrast, 91% were sensitized to rPru av 3 (LTP homologue) in the Spanish population compared to 11% of the central Europe patients. This was also reflected in systemic reaction where all but one patient comes from Spain and all but two were sensitized to rPru av 3.

The authors conclude that this is the first time in food allergy diagnosis, a mixture of recombinant allergens successfully mimicked a complex natural allergen extract.

SYNOPSIS

- Patients (n=17) IgE-sensitized to cabbage and reporting clinical symptoms to cabbage ingestion were studied.
- Five patients had systemic anaphylaxis, 3 urticaria/angioedema and 9 had OAS.
- IgE antibodies to cabbage were determined with ImmunoCAP™. The mean was 12.7 kU_A/L and the range 0.88-26.4 kU_A/L.
- Crude extracts were prepared from mustard seed, cabbage leaves and peach.
- An LTP-containing fraction was isolated by RP-HPLC of cabbage leaf extract.
- IgE antibody binding to purified Bra o 3 was tested in a ELISA assay.
- An antibody inhibition assay and SDS-PAGE were used to analyze specificity.

Citation: Palacin A et al. Cabbage lipid transfer protein Bra o 3 is a major allergen responsible for cross-reactivity between plant foods and pollens. *J Allergy Clin Immunol* 2006;117:1423-9.

Mugwort pollen – mustard allergy syndrome. A new clinical syndrome based on IgE-sensitization to lipid transfer protein (LTP) and clinical symptoms to cabbage and other plant foods

IgE-mediated allergy to mustard (Brassicaceae family) is a potentially severe reaction. The authors have recently published that 40% of patients allergic to mustard were also allergic to cabbage and often sensitized to mugwort. The levels of seed storage proteins, shown to be major allergens in mustard seeds, are very low or even absent in pollens and leaves. Therefore, the aim of this study was test the hypothesis that another major allergen family, other than seed storage proteins, was responsible for the immunological and clinical cross-reactivity between mugwort pollen, mustard seed, and cabbage.

Patients IgE-sensitized to cabbage and reporting clinical symptoms to cabbage ingestion were recruited. IgE in a serum pool from cabbage allergic patients bound to a 9 kDa component (SDS-PAGE) in extracts from cabbage leaves and mustard seeds. This component also bound anti-Pru p 3 antibodies indicating relation to the LTP family. The component was separated and purified from the cabbage leaf extract and showed a 50% identity with Pru p 3. All but one (94%) of the patients had IgE antibodies to the purified Bra o 3 allergen measured in an ELISA-assay. In an inhibition assay Bra o 3 and Art v 3 but also Pru p 3 inhibited the IgE-binding of pooled sera to ImmunoCAP™ with cabbage as solid phase.

The authors conclude that Bra o 3, an LTP, is the major cabbage allergen in this new clinical syndrome.