

SYNOPSIS

- Cat-allergic patients (n=36, mean age 18) were recruited.
- Diagnosis was based on anamnesis and all patients had serum IgE antibodies to cat and dog dander (ImmunoCAP®, Phadia AB, Uppsala, Sweden).
- Only five patients also reported clinical symptoms to dogs.
- The sensitization profile was determined using dot-blotted purified allergens rFel d 1, nFel d 2, nCan f 1 and nCan f 3.
- Recombinant Fel d 1 was expressed as a fusion protein in *E. coli*.
- Fel d 1-specific rabbit antibodies were obtained using rFel d 1.
- Quantitative ImmunoCAP® inhibition was used to test cross-reactivity.
- Pre-incubation with rFel d 1 showed more than a 50% inhibition of IgE binding to dog dander in 9 of the 36 patients.
- The clinical importance of IgE antibody cross-reactivity to the Fel d 1-like dog allergen has to be further investigated.

Citation: Reininger R et al. Detection of an allergen in dog dander that cross-react with the major cat allergen, Fel d 1. *Clin Exp Allergy* 2007; 37:116-24.

SYNOPSIS

- Patients (n=68) with plane pollinosis and/or a positive case history of immediate-type reactions to peach were recruited from the Barcelona region.
- A 10 kDa IgE-reactive protein was purified from plane pollen (Allergon) and identified as plane nsLTP (Pla a 3).
- Peach LTP (Pru p 3) was purified from fresh peach peel extracts.
- ImmunoCAP® was used to measure IgE antibodies to extracts of plane pollen, peach and LTP of peach (nPru a 3) and EAST (Allergopharma, Germany) was used to measure IgE antibodies to natural Pla a 3 and Pru p 3.
- Histamine release from stripped and passively sensitized basophils was performed.
- In plane pollen-allergic patients plane LTP was regarded as a minor allergen (18.2%) in patients without peach allergy and a major allergen (61.1%) in patients with peach allergy.
- Depending on patient serum, plane LTP showed a stronger, a similar or a weaker allergenic potency compared to peach LTP in histamine release assay in patients sensitized to both LTPs.

Citation: Lauer I et al. Identification of a plane pollen lipid transfer protein (Plan a 3) and its immunological relation to the peach lipid-transfer protein, Pru p 3. *Clin Exp Allergy* 2007; 37:261-9.

SYNOPSIS

- Children and young adults (n=37) with severe reactions after grape (*Vitis vinifera*) consumptions were recruited in Greece.
- 18 patients were prospectively recruited between 2000 and 2003.
- Mean age was 7.9 years (\pm 3.5).
- IgE antibodies to grapes, measured by ImmunoCAP® were detectable in all subjects (0.4-24.7 kU_A/l).
- Most patients (89.2%) were referred because of systemic anaphylaxis.
- All patients had multiple sensitization foods, pollen and other allergens.
- Grapes were the cause of the first-ever food allergic reaction in 20/37 patients.
- All sera reacted to a 9 kDa band in immunoblotting showed to be the grape LTP isoform P1 (*Vit v 1.0101*).
- Plant derived LTP partially inhibit binding to grape LTP (maize 27.5%, wheat 18% hazelnut 35%, strawberry 50.6% and sunflower 58.6%).
- Olive pollen, *Parietaria* and peanut extract did not inhibited binding to grape LTP.

Citation: Vassilopoulou W et al. Severe immediate allergic reactions to grapes: part of a lipid transfer protein-associated clinical syndrome. *Int Arch Allergy Immunol* 2007; 143:92-102.

Clinical association between cat and dog allergy can be due to cross-reactivity between Fel d 1 in cat dander and a homologous protein in dog dander

A clinical association between cat and dog allergy has been known since long ago. IgE antibodies to cat serum albumin (Fel d 2) are known to cross-react to dog serum albumin (Can f 3). However, the major cat allergen (Fel d 1) is a complex glycoprotein with unknown biological function and a corresponding protein has not been shown in dogs. A recombinant Fel d 1 (rFel d 1) has recently been produced and seems to mimic the immunological properties of the natural allergen completely. The aim of the present study was to use this recombinant protein to investigate whether a similar allergen exists in dog dander.

Cat allergic patients with a positive ImmunoCAP® test to cat as well as to dog were investigated. Five of the 36 patients also reported clinical symptoms to dog. Preincubation of patient sera with rFel d 1 showed a 41% mean inhibition of the IgE results to dog dander. An inhibition greater than 50% was obtained in every fourth sera. One patient showed high binding to Fel d1 but not to dog dander. A monospecific polyclonal rabbit anti-rFel d 1 antiserum reacted with a 20 kDa allergen present in a commercial dog dander extracts but also with home made extracts from different dog breeds.

In conclusion the authors show that a homologous allergen to Fel d 1 is present in dog dander and rFel d 1 shows cross-reactive as well as cat-specific epitopes.

Plane pollen non-specific LTP might be one of several primary sensitizing allergen components for nsLTP-mediated peach allergy

Peach allergic patients in the Mediterranean area are frequently sensitized to non-specific lipid-transfer proteins (LTP). The allergen inducing the primary sensitization is not clearly shown. The aim of this study was to investigate if plane pollen could induce LTP sensitization and result in a peach allergy.

Patients with plane pollen allergy, and/or peach allergy were recruited. Peach LTP inhibited the binding of IgE antibodies to purified plane pollen LTP. This indicate shared epitopes between plane LTP and peach LTP. In plane pollen-allergic patients without peach allergy very few reacted to plane LTP and peach LTP, only 18.2% and 9% respectively. The opposite was seen in the plane pollen allergic group with peach allergy where 61.1% reacted to plane LTP and 85.3% to peach LTP. Basophil histamine release was performed using passively sensitized basophils exposed to plane pollen LTP or peach LTP. Sera from five plane pollen allergic patients were studied. In the group with peach allergy (4) plane pollen LTP were more efficient than peach LTP to induce histamine release in two patients, both LTPs had similar efficiency in one patient and in another peach LTP was more potent. The fifth patient investigated had no peach allergy and LTP from plane was most potent.

The authors conclude that LTP is a clinical relevant allergen in plane pollen allergy and in some cases allergen-specific IgE antibodies lead to cross-reactivity with peach LTP and may cause clinical peach allergy.

Children and young adults with severe food reactions to grape are sensitized to LTP

Sensitization to LTP (non-specific Lipid Transfer Proteins) without concomitant pollen allergy but with severe systemic food reactions has been shown in adults in the Mediterranean region. They predominantly react to Rosaceae fruits and typically peach. Grape allergy has been considered as an uncommon problem, but in this study the authors report a Greece population of 37 children and young adults with severe reactions after grape consumption. All patients were polysensitized with a clinical expression of a variety of atopic diseases. Clinically, most patients reacted to grape before they got symptoms when eating peach.

In immunoblots with grape extracts all sera specifically reacted to a band of approximately 9 kDa. This major allergen component was purified and showed to be the grape LTP isoform P1. All tested patients (n=13) had a positive SPT to this LTP. Extract from peach, apple, hazelnut and LTPs from wheat, maize, hazelnut, strawberry and sunflower inhibited the binding of the patient sera to grape LTP. Olive pollen, *Parietaria* and peanut extract did not inhibit the binding.

In conclusion the authors present a new variety of plant food reactions based on LTP-sensitization. They suggest that the term LTP-syndrome should be used more extensively to describe such clinical expression.