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Peach allergy. Beyond the classic 3 allergens?

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Key words

Food allergy, Peach, Food-dependent exercise-induced anaphylaxis, Thaumatin-like protein

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Peach, a member of the Rosaceae family, is unquestionably one of the most frequent causes of food allergy. To date, allergy to this fruit has been mostly reported in three distinct settings. (a) In subjects primarily sensitized to birch pollen as the result of cross-reactivity between the major birch pollen allergen, Bet v 1, and a homologous protein in the fruit, named Pru p 1 (1). (b) In subjects characterized by IgE reactivity to multiple pollen extracts both in-vivo and in-vitro that co-recognize the plant pan-allergen profilin (called Pru p 4 in the peach) (2,3). (c) Particularly in Mediterranean countries, in patients allergic to nonspecific lipid transfer proteins, a family of heat- and pepsin-resistant plant food pan-allergens (4). In the present issue of European Annals of Allergy and Clinical Immunology Bianchi and co-workers report an interesting case of peach and cherry allergy that started as a food-dependent exercise-induced anaphylaxis and eventually became a classical food allergy. The authors carried out a careful diagnostic workup that ruled out IgE reactivity to the 3 peach allergens mentioned above. Notably, a skin test performed with a commercial peach extract known to contain 30 μg/ml of Pru p 3, but not the labile allergens, scored clearly positive. An attempt to induce oral tolerance giving 125 ml/day of a commercial peach juice that had produced a wheal-and-flare reaction on SPT proved unhelpful as the patient experienced a systemic reaction at rest (albeit following prolonged exercise) after drinking his daily dose of juice. Unfortunately, in this case the immunoblot analysis did not help in the detection of the relevant allergen. However, several data point to a heat- and pepsin-stable allergen: the fact that the boy experienced systemic reactions; the clinical reactivity to a commercial juice; and the positive skin tests both with a commercial peach extract lacking profilin and Pru p 1 and with the commercial peach juice.

Thus we are left with two possibilities: allergy to a Pru p 3 isoform that differs from that present in currently available in-vitro diagnostic tests; or, alternatively, allergy to Pru p 2, the peach thaumatin-like protein (TLP). Thaumatin-like proteins have been reported as relevant allergens in cherry (one of the offending foods in this case), apple, kiwi, and banana, bell pepper, grapes and recently in peach as well (5). In a Spanish cohort of peach-allergic patients about 50% recognized TLP in-vitro (5). However, the clinical relevance of TLPs is still ill-defined, mostly because TLP reactivity is in most cases low and associated with hypersensitivity to other distinct allergens (6). If this patient were a TLP reactor, this would be one of the first cases of

monosensitization described so far, and also an excellent way to classify TLP as a clinically relevant and potentially harmful allergen, in keeping with the protease-, pH-, and heat-resistance of this family of allergens (7).

One of us (LC) had recently the opportunity to visit a 38 years old women who had had a severe anaphylactic reaction (treated with epinephrine) that occurred after eating two peaches and having mild exercise. Similarly to the case reported by Bianchi and co-workers, the patient scored positive on SPT with commercial peach extract while specific IgE to Pru p 3 was negative. One further 18 years old man showed a similar diagnostic profile but experienced milder symptoms (only angioedema of the lips) after eating a peach. In both cases sensitization to profilin and Bet v 1 homologous proteins was ruled out and immunoblot analysis did not detect the relevant allergen (unpublished).

Whatever the relevant allergen involved, these cases remind us once more that skin testing with fresh material and allergenic extracts still represents an invaluable tool in the diagnosis of allergic diseases. In fact, although the number of allergen molecules available for diagnostic purposes is on the rise there will probably never be the guarantee of a complete coverage of potential allergens.

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