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Editorial

Skin Prick Testing Predicts Peach Hypersensitivity Reactions

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▸ See the article "Skin Testing With Peach Peel Extract *Versus* Serum IgE to Pru p 3 as a Stronger Predictor of Peach-Induced Anaphylaxis" in volume 13 on page 922.

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Although the prevalence and the type of fruit allergy vary from region to region, peach is the fresh fruit frequently involved in allergic reactions worldwide and the most common fruit allergy in Mediterranean area, especially in Spain. Clinical manifestations of peach allergy differ widely from mild oral symptoms to systemic reactions including anaphylaxis.

Therefore, it is important to predict whether a patient will develop systemic reactions. There are some studies on the roles of different peach allergens in relation to symptom severity. The most important peach allergen is Pru p 3 of non-specific lipid transfer protein (nsLTP).[1] Pru p 3 exists 7 times more in peel than in pulp.[2] Pru p 1, belonging to the pathogenesis-related (PR)-10 protein family, is found in small amounts mainly in fresh peach peel[3] and involved in most cases of peach-induced oral allergy syndrome (OAS) as part of pollen food allergy syndrome (PFAS) that cross-reacts with major birch pollen, Bet v 1.[4] Pru p 4 belongs to a profilin family, and is associated with PFAS that cross-reacts with profilins widely present in pollens of trees, grasses, and weeds. Several studies found that Pru p 4 could be considered a predicting marker for non-systemic, OAS.[5,6] Pru p 7 (peamaclein), a member of a gibberellin-regulated protein family, is contained in peel and pulp, and has been reported to be involved in anaphylaxis not caused by Pru p 1, Pru p 3, or Pru p 4 in areas with high cypress pollen exposure.[7,8] Sensitization to Pru p 7 is suggested as a marker for severe peach allergic reactions, and the severity of the reaction is significantly related with sIgE concentrations.[8]

In various regions of Europe, different clinical phenotypes of peach allergy have been observed in association with different allergen sensitization patterns to the peach allergens. In Central and Northern Europe where birch trees are rich, peach allergy is known to be associated with birch pollen allergy; Pru p 1-sensitized patients usually manifest OAS that cross-reacts with birch pollen, Bet v 1.[4] In contrast, in Southern Europe without birch trees, peach allergy frequently results in systemic reactions caused by sensitization to nsLTP Pru p 3.[4] Even in Central Europe, LTP sensitization represents a risk factor for severe allergic symptoms.[9] However, contradictory results have also been reported. In Italy, Pru p 3-sensitized peach-allergic patients are less likely to develop severe symptoms when they also have sIgE to Pru p 1 and Pru p 4.[6] In Italian children with peach allergies, the presence of sIgE to Pru p 3 is not associated with systemic symptoms, and the levels of sIgE to Pru p 3 do not correlate with the severity of the reactions.[10]

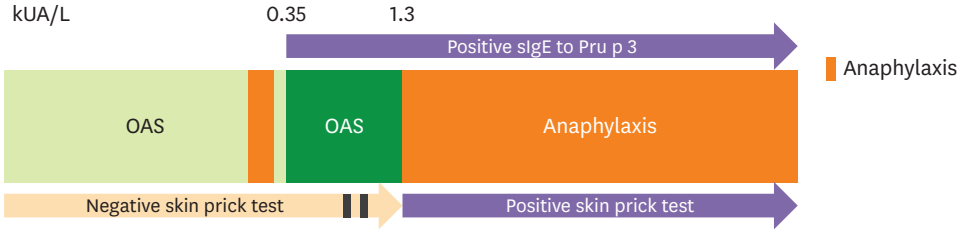

Figure. Skin prick test versus specific immunoglobulin E to Pru p 3 for predicting symptoms of peach allergy. OAS, oral allergy syndrome.

The current research work by Somoza *et al.*[11] compared skin prick tests (SPT) versus serum sIgE for predicting peach anaphylaxis in Spanish patients with peach allergy and found that SPT with peach peel extract predict anaphylaxis better than sIgE to Pru p 3. In patients with peach allergy, sIgE to Pru p 3 was positive in 85% *vs.* 38% of patients with anaphylaxis and OAS, respectively. In addition, SPT to peach peel was positive in 80% *vs.* 9.5% of patients with anaphylaxis and OAS, respectively. Among the patients with OAS (n = 21), 12 were both SPT- and sIgE-negative, 7 were SPT-negative and sIgE-positive, and 1 patient was both SPT- and sIgE-positive. Taking a closer look at the results of 7 OAS patients with SPT-negative and sIgE-positive, their levels of sIgE were from 0.37 to 1.26 kU_A/L. There was no positive sIgE to Pru p 7 in these patients. Taken together, these results suggest that the level of sIgE to Pru p 3 could predict symptoms of peach allergy, *i.e.*, anaphylaxis or OAS: interestingly, if it is more than 1.3 kU_A/L, it is more likely to be anaphylaxis, and if it is less than 0.1 kU_A/L, it is more likely to be OAS. However, negative SPT had high predictive power for OAS in the sIgE range of 0.1–1.3 kU_A/L, which was difficult to predict which symptoms will occur (**Figure**). Because the number of cases is too small, additional studies are needed to generalize these results.

The 2 commercial peach extracts for SPT (Lofarma SpA and ALK-Abellò) and Pru p 3-enriched peach peel extracts were found to contain both Pru p 3 and peamaclein, Pru p 7, but not the labile allergens Pru p 1 and/or Pru p 4.[12,13] The content of Pru p 3 is especially predominant in the peel, accounting for approximately 15 μg/mg of freeze-dried peach peel extract.[14,15] Most patients with peach allergy can eat peeled pulp because the amount of major allergen is greater in the peel than in the pulp.[16]

In conclusion, although some patients may require oral food challenge test to obtain an adequate treatment plan, physicians will be able to determine an appropriate dietary guidance for most patients with peach allergy based on a detailed history of allergic reactions, SPT results, and sIgE to component allergens.

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