

EDITORIAL

Food reactions in pollen and latex allergic patients

Untoward allergic reactions to foods may be easily recognized when the clinical symptoms occur immediately. Symptoms occur from very small quantities of food, often within minutes, but sometimes within 1–2 h of eating the suspected food. The clinical responses are urticaria, rhinitis, asthma, vomiting, diarrhoea or anaphylaxis. The diagnosis is easy because of the close correlation between eating the food, and the subsequent symptoms. Moreover, patients with immediate, and often very severe, allergic symptoms from small amounts of food have an IgE-triggered mechanism which can be confirmed by skin or *in vitro* testing, but immunological symptoms often cannot be demonstrated in a second type of food reaction that occurs at least 2 h, and sometimes even longer than a day, after the ingestion of the offending food(s). These 'delayed' symptoms, while they may be those associated with classical allergy, can also include a wide variety of symptoms affecting various organs. Food 'intolerance' is a word to indicate that, although immune mechanisms may be operative, a definite diagnosis can only be proved with a suitable food challenge [1].

Adverse food reactions in patients with pollen-allergic respiratory disease have been studied during the last 20 years, particularly in the Scandinavian countries, because silver birch (*Betula*) pollen allergy is the pollen that causes most seasonal allergic complaints, but is also associated with IgE-mediated symptoms related to fresh fruit and vegetables [2–4]. Skin tests will confirm the cause of symptoms in patients suffering from pollenosis. Allergic crossreactivity among grass pollens is well recognized [5], since the reactions occur between taxonomically-related grass pollens, but patients often react on skin testing to different unrelated pollens from grasses, weeds and trees which may have no clinical importance.

A report in this issue of the Journal [6] begins to explain the allergic relationship between taxonomically-diverse pollens. There is evidence [7] that a family of cytoskeletal proteins called profilins, with a molecular weight of 14–18 kDa are present in several different pollen species and can act as pan-allergens. They are also present in many plants, so that the clinical relationship between pollen sensitivity and allergic reactions to various foods can be explained. Indeed, the association of birch pollen allergy and allergic reactions to nuts and uncooked fruit and vegetables has undergone much study [8]. It is stressed that the plant pan-allergens profilins, and possibly other allergens, are ubiquitous in plant proteins, so that they can produce allergic

syndromes of related pollen- and food-allergic reactions. Profilin sensitization causing crossreactions may occur in birch and other pollens and many fresh fruits and vegetables [9–13]. Profilins are generally, but not always, thermolabile proteins. In effect, this means that patients who may be anaphylactically sensitive to many fresh fruits and vegetables can usually eat these with impunity when they have been cooked. It has been reported [14] that the 18 kDa major allergen represents most of the allergenicity of the apple and that all allergenic epitopes of the apple protein are present on Bev v 1. However, although Bev v 1 is the major allergen in birch pollen, many birch pollen-allergic patients are not allergic to apple, or any fresh fruit. Moreover, profilin is usually heat-labile and unstable so that commercial extracts of fruit and vegetables cannot be used diagnostically for skin testing. Yet Moller [15] found that pollen immunotherapy helped children's food hypersensitivities. Further trials must be carried out to confirm this rather surprising finding.

Profilins are not the only crossreactivity allergens in pollen and vegetable foods. It has been found that patients who are monosensitized to grass pollen, compared with those sensitized to *Dermatophagoides*, report adverse reactions to foods, especially peanuts, garlic, tomato, onion and various fruits, but also to animal foods such as egg and pork [16]. The cause of food intolerance in the pollen-allergic group is not easily explained [17], although it has been suggested that this could be due to increased permeability to macro molecules [18]. It would seem that children and adults can have three different types of allergic reactions to foods [19]. It is noteworthy that, in the Italian study of pollen-allergic patients, there were no immediate IgE responses to milk but milk was responsible for the highest number of patients with delayed food intolerance symptoms. A long-term follow-up of both groups will be of interest. The most common food allergy in adults was due to peanuts (42%) but 60% (Frankland — unpublished observation) of 1000 patients with anaphylactic peanut allergy were already allergic at the age of 5 years. We know that most patients grow out of immediate type milk allergic problems but it is not known why this does not occur in the severely peanut-allergic patient who is often also pollen-allergic.

Latex allergy is increasing [20]. Latex allergens may crossreact with a small range of fruits which are commonly avocado, banana and chestnut. The allergens involved in latex allergy have a molecular weight which

varies from 10 to over 100 kDa and some latex-sensitive patients become anaphylactically allergic to fresh fruit. It must be remembered, however, that the banana-allergic subject may not yet be allergic to latex when first seen [21]. It has been found in the 'latex fruit syndrome' that 52% of latex-allergic patients had allergies to fruits and systemic anaphylaxis occurred in 36% [22]. Latex has been shown by RAST inhibition to share common antigenic determinants which are not botanically related.

The presence of profilins may well explain the cross-reactions between fresh fruit and vegetables, and silver birch pollen. However, this cannot be the only explanation of crossreaction between grass pollens and other foods, since grass pollen-allergic patients are sensitive not only to fresh fruits, but also to animal foods such as egg and pork. It is interesting that, in the latex-sensitive patient, anaphylactic reactions are seen to fresh banana, avocado pear and chestnut. These are not usually the fruits that cause trouble in the pollen-sensitive patient. Because IgE food-related reactions can cause anaphylaxis, clinicians must always remember that these reactions may be related to pollen and latex allergy.

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