

# How does pollen cause food allergy?



## Dear Subscriber

### WHAT IS POLLEN-FOOD ALLERGY SYNDROME (PFAS)?

PFAS, also known as oral allergy syndrome, is an allergic reaction that typically occur upon ingestion of certain foods in pollen-sensitised individuals.<sup>1</sup>

Approximately **20-70%** of patients sensitised to pollen allergens experience PFAS symptoms after eating raw fruits, vegetables, nuts, or certain spices; **66%** of birch-sensitized individuals in a UK cohort were diagnosed with PFAS using oral food challenge. Pollen is a common trigger of seasonal asthma and rhinitis.<sup>2</sup>

PFAS is distinct from simple food allergies; PFAS is triggered by a cross-reaction between allergens in pollen and allergens in fresh fruits and vegetables. Patients typically describe itching or tingling in the lips or mouth, oral burning and swelling, or throat tightness after ingestion of fresh fruits or vegetables.

The symptoms of PFAS **appear within minutes and can last for hours** after eating raw forms of the food; in the majority of cases, the responsible allergens are rapidly denatured by cooking and digestion (some patients will react to cooked foods) and approximately 2-10% of patients can still present with systemic reactions.<sup>1,3</sup>

### HOW SHOULD YOU IDENTIFY THESE PATIENTS?

There is little guidance on the identification and management of PFAS. The American food allergy guidelines recommend that clinicians should consider the diagnosis of PFAS and obtain specific IgE testing to pollens in patients who experience limited oropharyngeal symptoms after ingestion of food antigens that cross-react with pollen antigens.<sup>4</sup>

Specific IgE (also known as ImmunoCAP and, as a previous technology, known as RAST) is no different, in terms of venipuncture, to many other blood tests. It is the gold-standard quantitative IgE test and has an excellent clinical performance (sensitivity 84-95% and specificity 85-94% depending on the allergen. It is available from your local pathology laboratory and a 1 ml sample of blood in a serum tube is sufficient to test for up to 10 allergens and a result of  $\geq 0.1$  kU<sub>A</sub>/L is indicative of sensitivity.

### WHICH ALLERGENS SHOULD YOU CONSIDER TESTING FOR?

On average, patients with PFAS will have 4 foods that will lead to PFAS symptoms. The most common food allergens to trigger PFAS in the UK are: hazelnuts, apples, kiwifruit, strawberry and brazil nuts.<sup>2</sup>

Birch <sup>3</sup>	Grass pollen <sup>3</sup>
Almond Apple, Apricot, Carrot, Celery, Cherry, Chestnut, Chicory, Date palm, Fennel, Fig, Grape, Hazelnut, Jackfruit, Kiwi, Melon, Orange/nectarine, Parsley, Parsnip, Peach, Peanut, Pistachio, Pear, Plum, Potato, Prune, Spinach, Walnut, Watermelon	Apple Carrot, Celery, Chamomile, Chestnut, Currant, Date palm, Eggplant, Fig, Grape, Kiwi, Melon, Mushroom, Orange/nectarine, Peach, Pistachio, Tomato, Watermelon
Mugwort pollen <sup>3</sup>	Ragweed pollen <sup>3</sup>
Apple Aniseed, Apple, Avocado, Caraway seed, Carrot, Celery, Chamomile, Coriander, Fennel, Mango, Mustard, Parsley, Peach, Peppers, Sunflower, Watermelon	Apple Banana Cantaloupe melon, Carrot, Celery, Chamomile, Coriander, Cucumber, Dandelion, Fennel, Honeydew melon, Kiwi, Melon, Peach, Peppers, Watermelon, Zucchini

### WHAT ARE THE RECOMMENDATIONS FOR PATIENT MANAGEMENT?

The American food allergy guidelines recommends that PFAS is managed by dietary avoidance of raw fruits, vegetables, or both based on the severity of the patient's symptom profile: patients with OAS benefit from cooking raw fruits and vegetables to denature proteins before ingestion. However, if symptoms are more severe, progress in severity, or are associated with systemic symptoms, full dietary restriction of the causal food or foods is warranted. The NICE food allergy guidelines recommend that these patients are referred.<sup>4,5</sup>

## References

1. Up to date. Pollen-food-allergy-syndrome. Available from: <http://www.uptodate.com/contents/management-and-prognosis-of-oral-allergy-syndrome-pollen-food-allergy-syndrome>; last accessed June 2016.
2. Skypala IJ, *et al. Clin Exp Allergy* 2013;43:928-940.
3. Price A, *et al. Dermatitis* 2015;26:78-88.
4. Sampson HA, *et al. J Allergy Clin Immunol* 2014;134:1016-1025.
5. National Institute for Health and Care Excellence. Food allergy in children and young people (CG116). 2011. London: National Institute for Health and Care Excellence.