

Case reports of peanut-fenugreek and cashew-sumac cross-reactivity

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Clinical Implications

- A case of fenugreek allergy in a peanut-allergic patient due to possible fenugreek-peanut cross-reactivity and a case of sumac spice allergy in a cashew-allergic patient due to possible sumac-cashew cross-reactivity.

TO THE EDITOR:

An increasingly encountered scenario is a peanut- or cashew-allergic patient reacting to a protein that is botanically related to peanut or cashews because of possible cross-reactivities between the related proteins.¹⁻⁴ *Cross-reactivity* refers to the phenomenon where specific immunoglobulin E (sIgE) antibodies recognize epitopes from the source protein, as well as similar epitopes on a different protein. Here, we present a report of a peanut-allergic individual likely reacting to fenugreek because of peanut-fenugreek cross-reactivity and the first ever report of a cashew-allergic individual likely reacting to sumac because of cashew-sumac cross-reactivity.

In case 1, a 14-year-old boy, with known peanut (skin prick testing [SPT], 18 mm; sIgE, >100 kU/L; Ara h 2 sIgE, >100 kU/L), lentil (18.9 kU/L), chick pea (25.2 kU/L), and pea allergies (22.5 kU/L) presented with a history of pruritus and tingling lips within minutes of eating a curry for the first time at a restaurant. Symptoms resolved with epinephrine and diphenhydramine. Several hours later, he developed chest heaviness, urticaria, and wheezing, which resolved within a few hours. The restaurant stated that it was a “peanut-free” restaurant and guaranteed that the curry contained no proteins he was known to be allergic to. On repeat exposure to the curry at the same restaurant, pruritus, hives, shortness of breath, and nausea developed within minutes of ingestion. Symptoms resolved rapidly with epinephrine. SPT to 11 common components of curry (Table 1) revealed a strong positive reaction to fenugreek (13 mm wheal).

In case 2, a 14-year-old girl, with known cashew (SPT, 16 mm; sIgE, 2.4 kU/L), pistachio (SPT, 12 mm; sIgE, 2.96 kU/L), peanut, and soy allergies presented with a history of abdominal discomfort after eating Fattoush salad, hummus, pita bread, barbecue chicken, and beef from a Lebanese restaurant. An hour later, she developed pruritus, a cough, and eyelid angioedema. Symptoms resolved with epinephrine and oral corticosteroids. The restaurant guaranteed that the foods ordered contained no proteins she was known to be allergic to. She has since tolerated the foods from the same restaurant except for the salad. On repeat exposure to the Fattoush salad from the same restaurant, she developed abdominal discomfort and hives within

minutes, which resolved within 24 hours without medication. SPT to the common components of Fattoush salad (Table 2) revealed a strong positive reaction to sumac (15 mm wheal) and a mild positive reaction to hummus (3 mm wheal). She tolerates sesame and chickpeas.

In both cases, the individuals were well and not exposed to any other foods, alcohol, or medications that were not mentioned. Each individual spice was mixed with normal saline to create a paste that was used for testing. To ensure that the SPT results were not a result of irritation, we tested each spice on healthy control subjects and they tested negative to the spices with a positive histamine control. We were unable to perform sIgE or inhibition ELISA testing to the spices. Both individuals did not wish to undergo an oral challenge because of past reactions.

Fenugreek (*Trigonella foenum-graecum*) is a spice commonly used in curry⁵ and is from the Fabaceae family, which is the same botanical family as peanuts. There have been an increasing number of case reports, mostly originating from Europe, of peanut-allergic individuals reacting to fenugreek proven to be due to peanut-fenugreek cross-reactivity.¹ Several potential allergens in fenugreek with significant homologies to major peanut allergens have been characterized.⁶ Primary fenugreek allergy is less common than a secondary fenugreek allergy due to peanut-fenugreek allergy.¹

In case 1, because the restaurant was unable to provide us with the list of ingredients used in the curry, we tested the patient to ingredients that we believed were used in most curries.⁵ This individual had other existing legume allergies, and could have caused him to be more susceptible to cross-reactions to other legumes. His sIgE levels to peanut were much higher than to the other legumes, which makes the possibility of peanut-fenugreek cross-reactivity more likely.

Fattoush salad is a Mediterranean salad composed of mixed vegetables and za'atar. Za'atar is a mixture of spices consisting of sumac, sesame, dried thyme, and salt. Sumac (*Rhus coriaria*) is a spice commonly used in Mediterranean cuisine and is also from the Anacardiaceae family, which is the same botanical family as cashews. We were unable to find any reports of sumac spice allergies in the medical literature.

In both cases, although references for SPT have not been established, there was a significant enough reaction on SPT to conclude a spice allergy in both individuals. Contamination of the foods with proteins the individuals were known to be allergic to cannot be totally eliminated because the food samples were not tested. However, this is probably unlikely because they both reacted multiple times to the food and their SPT results were quite positive.

Most cross-reactions are considered insignificant.⁴ However, it may be important to take a closer look at the clinical significance of cross-reactivities in those with peanut and cashew allergies because their prevalence is increasing⁷ likely due to increased consumption,^{3,4} they are common lifelong food allergies,^{3,7} they are associated with more severe and fatal

TABLE I. Case 1 SPT and sIgE test results

Food/protein	SPT (mm)	sIgE (kU/L)
Peanut	18	>100
Ara h 2	—	>100
Chick pea	—	25.2
Pea	—	22.5
Lentil	—	18.9
Sesame seed	—	0.44
Fenugreek seed	13	—
Bay leaf	0	—
Clove	0	—
Coriander	0	<0.35
Ginger	0	—
Turmeric	0	—
Celery seed	0	—
Nutmeg	0	—
Cayenne pepper	0	—
Dehydrated onion	0	—
Cumin	0	—
Bulk barn no name curry	15	—
Great value curry	16	—
Cool runnings curry	16	—
Histamine	8	—

TABLE II. Case 2 SPT and sIgE test results

Food/protein	SPT (mm)	sIgE (kU/L)
Cashew	16	2.4
Pistachio	12	2.96
Almond	—	0.65
Peanut	12	—
Soy bean	0	1.87
Chick pea	—	2.47
Sesame seed	—	0.34
Fattoush salad	15	—
Sumac	15	—
Hummus	3	—
Edamame	14	—
Pita bread	0	—
BBQ chicken	0	—
BBQ beef	0	—
Walnut	4	—
Histamine	5	—

BBQ, Barbeque.

reactions,^{3,7} and there have been an increasing number of cases being reported.¹⁻⁴ It may also be important to take a closer look at fenugreek and sumac allergy because their consumption is increasing because of the introduction of international cuisine^{1,3} and they are commonly hidden under the term “spices” on food labels.⁵

In conclusion, we have presented a report of fenugreek allergy in a peanut- allergic individual likely due to peanut-fenugreek cross-reactivity and, to our knowledge, the first formally documented case of sumac allergy in a cashew-allergic individual likely due to cashew-sumac cross-reactivity. We believe that physicians should be aware of potential cross-reactivities in peanut- or cashew-allergic patients and discussions should be held with these families regarding potential accidental exposures.

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Informed consent was obtained from the parents to write this case report.

Conflicts of interest: The authors declare that they have no relevant conflicts of interest.

Received for publication November 3, 2016; revised December 23, 2016; accepted for publication December 28, 2016.

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2213-2198

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<http://dx.doi.org/10.1016/j.jaip.2016.12.024>

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