

Correspondence

Unlocking the resistance to wheat lipid transfer protein

To the Editor:

Two cases have been published concerning wheat allergy in children with tolerance to a foodstuff of whole-grain wheat cereal biscuit (Weetabix; Weetabix Ltd, Burton Latimer, United Kingdom).¹

We present 4 patients with the lipid transfer protein (LTP) syndrome,² showing confirmed Tri a 14-mediated cereal allergy by wheat oral food challenge (OFC). These patients present multiple food allergies (tree nuts, rosaceous fruits, lettuce, and cereals). All patients had positive skin test results to wheat, nPru p 3, and nTri a 14. Sensitization to other cereal proteins (such as ω -5-gliadin and gluten proteins) was not found.

First patient: 16-year-old boy who showed urticaria, angioedema, and abdominal pain after wheat ingestion (OFC, 500 mg); specific IgE (sIgE) to rTri a 14, 66.3 KU/L; wheat, 3.89 KU/L; and rPru p 3, 320 KU/L. Second patient: 10-year-old girl with severe abdominal pain, vomiting, and urticaria after bread ingestion (OFC, 800 mg); sIgE to rTri a 14, 4.6 KU/L; wheat, 5.68 KU/L; and rPru p, 3.86 KU/L. Third patient: 50-year-old woman with urticaria, angioedema, and dyspnea after wheat ingestion (OFC, 200 mg); sIgE to rTri a 14, KU/L; wheat, 4.72 KU/L; and rPru p, 38.21 KU/L. Fourth patient: 18-year-old woman with 3 episodes of exercise-induced anaphylaxis after cereal ingestion (no OFC because of the severity of her symptoms); sIgE to rTri a 14, 1.63 KU/L; wheat, 0.35 KU/L; and rPru p, 310.1 KU/L.

Oral challenge with Weetabix foodstuff was performed in the patients (53.8 g) who tolerated it without suffering from any symptoms. The fourth patient was able to exercise without symptoms after Weetabix ingestion. We assessed the regular ingestion of this prepared foodstuff on a daily basis in all cases. We presumed that this prepared foodstuff could be a safe alternative for these patients.

Individual sera were incubated with allergen array that included 12 wheat allergens related to baker's asthma. All of them showed exclusively specific IgE binding to Pru p 3 and Tri a 14 (Table I).

In the same way, a homogenate sample of Weetabix was solubilized in PBS and the resulted supernatant was separated by using SDS-PAGE. No bands could be detected by Coomassie staining. Thus, a sample of the same supernatant was analyzed by using mass spectrometry, observing peaks at less than 2 kDa. During manufacturing of the Weetabix, proteins might suffer proteolytic processing and/or aggregation and this could prevent their solubility in salt buffers. As observed in our results, the disappearance of the albumin/globulin band (that includes LTPs) after manufacturing cereal has been recently reported.¹ During the elaboration process of Weetabix, pressure and temperature treatment should suffice to inhibit the allergenic activity of LTPs, even their disappearance as soluble form, demonstrated both by SDS-PAGE and the tolerance of wheat-allergic patients.

This is a novel fact given the resistance of LTPs to the usual treatments of food manufacturing that cause the persistence of

TABLE I. Baker's asthma allergen array

	Patient 1	Patient 2	Patient 3	Patient 4
Wheat allergens				
nTri a 28 (WDAI-2)	0	0	0	0
nTri a 53 (WDAI-1)	0	0	0	0
nTri a 29 (WTAI-CM1)	0	0	0	0
nTri a 29 (WTAI-CM2)	0	0	0	0
nTri a 30 (WTAI-CM3)	0	0	0	0
nWTAI-CM16	0	0	0	0
nWTAI-CM17	0	0	0	0
nTri a 14	106.7	63.7	29.7	127.7
nTri a 19	0	0	0	0
nTri a Bd 36	0	0	0	0
Other allergens				
nArt v 3	0	0	0	0
nPru p 3	453.3	608	297	98.8
nOle e 1	0	0	19.7	0
nPhl p 12	0	0	0	0
nPho d 2	0	0	0	0
rDer p 2	0	0	0	0
rPhl p 1	0	0	0	0

Data are in arbitrary units of fluorescence.

symptoms after ingestion of cooked foods.³ Thereby, the process included in manufacturing Weetabix could be applied for other plant foods to obtain the proteolysis of LTPs, improving henceforth food security and the number of foods tolerated by these patients.

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Disclosure of potential conflict of interest: The authors declare that they have no relevant conflicts of interest.

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<http://dx.doi.org/10.1016/j.jaci.2013.08.013>