

Cross-reactivity between buckwheat and latex

CASE histories are presented of two patients sensitized to latex who experienced a severe anaphylactic reaction after consumption of small pancakes prepared with buckwheat flour. Buckwheat (*Fagopyrum esculentum*) has been recognized as a very potent allergen causing both inhalant and food allergy. The sensitizing properties were recently reported in a review article published in *Allergy* (1). Occupational exposure causes respiratory symptoms not only in Asian countries, where the hulls of buckwheat are used as cushion fillings, but also in Europe, as in factories where buckwheat flour is repacked from sacks into small packets, or in bakeries. The occurrence of severe anaphylactic reactions to buckwheat as a food allergen has also been previously described (2-4). However, the possible cross-reactivity of latex and buckwheat has been reported only once before (5). We describe two additional cases in which the clinical history as well as the results of RAST-inhibition experiments led to the conclusion that latex contains epitopes which show cross-reactivity with buckwheat.

■ **Case 1.** A woman aged 27 years was exposed to latex by wearing gloves covered with a layer of natural rubber as goalkeeper on a soccer team. For 4 years, she had noticed rhinoconjunctivitis and urticaria in her face while playing, especially if the gloves were newly bought. She experienced pruritus oris and generalized urticaria after consumption of banana and kiwi. A severe episode of flush, urticaria, and dyspnea occurred after a meal of small pancakes (Dutch: "poffertjes"), which are traditionally prepared with wheat flour mixed with 5% buckwheat flour. An open provocation test with buckwheat in applesauce (starting with 100 mg and increasing the amount to 5 g) produced a severe flush reaction, nausea, and vomiting 30 min after the last dose of 5 g (cumulative dose 6.6 g). She had no adverse reactions to other foods, including avocado and chestnut.

Case 2. A woman aged 23 years was exposed to natural rubber latex in a fish factory, where all personnel are obliged to wear latex gloves while

cleaning fish. She noticed itch and contact urticaria on the skin of her hands when wearing these gloves, and rhinoconjunctivitis and asthma in the working environment. An anaphylactic reaction with cyanosis and unconsciousness occurred after consumption of the same type of small pancakes. She had oral allergy symptoms after eating banana and kiwi, but no other food allergies. She never consumed avocado or chestnut. In view of the risk, no provocation test with buckwheat was performed.

■ Buckwheat flour (mixed with saline), banana, kiwi, avocado, and chestnut were skin tested as "prick-to-prick tests" with fresh native material. Latex (0.5 mg/ml; diluted 1:10) and common inhalants (house-dust mite, grass pollen, and birch pollen) were tested with a commercially available extract provided by ALK-Abellø. In both patients, positive skin tests were found for latex, buckwheat, and several well-known "latex-clustered" food allergens, i.e., banana, kiwi, avocado, and chestnut.

Two patients sensitized to latex experienced an anaphylactic reaction to buckwheat; the buckwheat RAST was completely inhibited by latex.

Specific IgE levels were measured with both the Pharmacia CAP System and RAST with Sepharose-coupled allergens. Raised specific IgE levels were found for both latex (18 kU/l in case 1 and >100 kU/l in case 2) and buckwheat (2.7 kU/l in case 1 and 16 kU/l in

case 2). Patient 1 had a positive intracutaneous test and a raised specific IgE level for house-dust mite, but patient 2 had negative skin tests and normal IgE levels for all three common inhalants.

■ We investigated whether the RAST for natural rubber latex could be inhibited by buckwheat extract and vice versa. Natural rubber latex was obtained directly from a rubber tree, and after extraction of the coagulated material with phosphate-buffered saline (PBS), latex extract and buckwheat extract were coupled to Sepharose 4B (Pharmacia, Uppsala, Sweden), 3 mg of protein being used for 100 mg Sepharose. As can be seen in Fig. 1A, no inhibition was observed by preincubation of serum 1 with different amounts of buck-

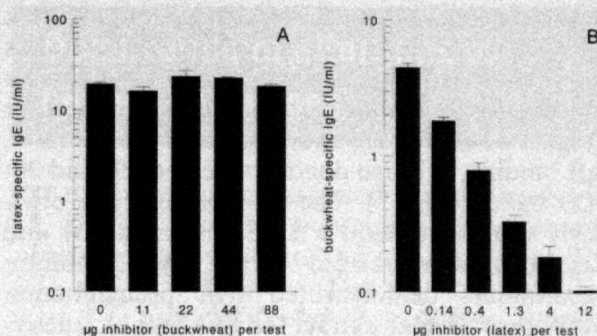


FIGURE 1 Latex can inhibit buckwheat RAST, but reverse is not true. A and B show results of inhibition experiment performed with serum from patient 1.

wheat protein. On the other hand, a strong inhibition of the buckwheat RAST could be obtained with latex extract, as shown in Fig. 1B. For patient 2, identical, even more convincing results were obtained; in serum 2, less than 1 µg inhibitory latex extract induced more than 95% inhibition of the buckwheat RAST. Amounts of serum and solid phase were adjusted in order to obtain proper conditions for inhibition experiments. RAST results, shown as mean values with error bars indicating SD, are expressed as units of IgE per ml (1 unit=2.4 ng). Homologous RAST inhibitions were complete (results not shown).

■ Anaphylactic reactions to foods, mainly fruits of exotic origin, cross-reacting with latex are well known. The cross-reactivity between latex and banana, avocado, and chestnut has been especially well documented (6–9). Only once before has cross-reactivity with buckwheat been described, and in that study no RAST-inhibition experiments were done (5). In our cases, the clinical history as well as the results of RAST-inhibition experiments strongly indicate cross-reactivity between latex and buckwheat.

Its increasing popularity in health food (“whole-grain products”) and vegetarian food makes buckwheat a potential cause of food anaphylaxis, especially in latex-sensitized patients.

Key words: anaphylaxis; buckwheat; cross-reactivity; latex.

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Allergy to mare's milk

MARE'S milk is becoming increasingly popular as an alternative treatment of various diseases such as psoriasis and atopic eczema. It can be ingested as pure milk or as capsules containing lyophilized granules of milk. Several reports in the literature indicate a connection between respiratory allergic sensitization to animal products and food allergens derived from the same animals (1–3). The present case provided us with the opportunity to characterize allergens of mare's milk and to investigate cross-sensitization caused by respiratory allergy to horse dander.

A 30-year-old atopic woman with allergic bronchial asthma underwent horse-riding therapy to restore disturbances of equilibrium caused by cranial trauma. During this treatment, her bronchial asthma deteriorated. The patient inhaled

Inhalant sensitization to horse proteins can cause food allergy to mare's milk.

thrice daily Berodual® (two puffs of 0.05 mg fenoterol hydrobromide and 0.02 mg ipratropium bromide), and Becotide® (beclomethasone dipropionate two puffs of 0.25 mg) two times

a day. After 1 month, she had to stop riding because of her bronchial disorder. To “strengthen” the immune system in this situation, she was advised to drink mare's milk. Some minutes after the first sip, oral pruritus developed, followed by systemic allergic reactions (generalized urticaria, angioedema, and bron-

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