

Anaphylaxis caused by cauliflower

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Summary. *Background:* Cauliflower is a vegetable belonging to the family *Cruciferae*, genus *Brassica*, var. *Botrytis*. *Methods:* We report the case of a 70 year-old man who suffered an acute episode consisting of oropharyngeal itching, facial and hand swelling, dyspnea and severe bronchospasm within a few minutes after eating vegetable paella containing cauliflower, green beans, red and green pepper. Due to the severity of the reaction he needed treatment in the emergency room. *Results:* Skin prick tests with common aeroallergens were positive to *Cupressus*, *Platanus* and grass pollen. A strong skin prick test response was obtained with cauliflower and peach lipid transfer protein. Skin prick test with rice, green beans and pepper were negative. Specific IgE determinations were positive to cabbage and cauliflower, and negative to mustard. *Conclusions:* The clinical history and the results of the allergologic work-up point out to this patient having experienced an IgE-mediated anaphylactic reaction to cauliflower. To the best of our knowledge, this is the first case report of anaphylaxis due to cauliflower.

Key words: anaphylaxis, food allergy, cauliflower, vegetables.

Case report

We report on a 70 year-old man who suffered an acute episode of oropharyngeal itching, facial and hand swelling, as well as severe bronchospasm within a few minutes after eating a vegetable paella containing cauliflower, green beans, red and green pepper. Due to the severity of the reaction he was treated in the emergency room. He had eaten paella and the same vegetables on several occasions, and he never had an adverse reaction before. He also suffered from oral allergy syndrome with some fruits (apple, peach, melon, apricot) and nuts (walnut, peanut), so he had stopped eating them. In the last years he had experienced symptoms of seasonal allergic rhinoconjunctivitis in springtime.

Material and methods

Skin prick tests were performed with common aeroallergens, commercial food extracts, peach lipid transfer protein (LTP) as well as with fresh foodstuffs: cauliflower, green bean and red and green pepper. Total

IgE and specific IgE determinations were carried out by the CAP System (Pharmacia, Uppsala, Sweden). An extract of fresh cauliflower was prepared at 30% wt/vol in normal saline. Immunoblotting with the cauliflower extract and immunoblotting-inhibition studies with mustard were carried out using patient's serum.

Results

Skin prick tests with common aeroallergens were positive to *Cupressus*, *Platanus* and grass pollen. A strong cutaneous reaction was obtained with fresh cauliflower (24 mm wheal) and peach LTP (8 mm wheal). Skin prick tests with foodstuffs were also positive to almond, hazelnut, peanut, chestnut, walnut, sunflower seeds, peach, strawberry, plum, apple, pear, kiwi, banana and green bean. Skin prick test with rice and pepper were negative.

Total serum IgE was 257 IU/ml. Specific IgE determination results were positive to cabbage (0.79 kU/L), cauliflower (0.49 kU/L) and apple (1.54 kU/L), and negative to mustard and mugwort pollen (<0.35 kU/L). The immunoblotting with cauliflower extract showed

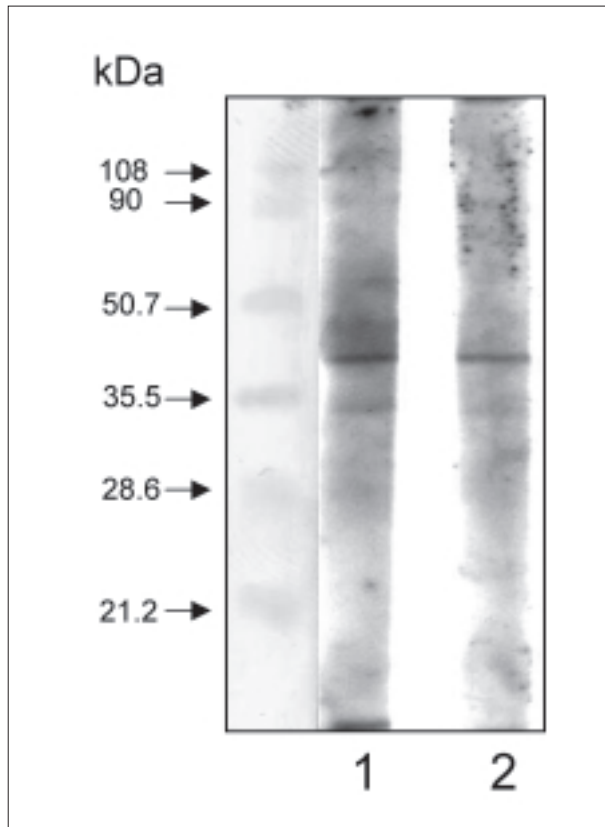


Figure 1. Left: Molecular weight markers. Lane 1: IgE immunoblotting of cauliflower extract (100 µg) and patient's serum (dilution 1/10). Lane 2: Inhibition of cauliflower immunoblotting preincubating patient's serum with mustard extract (500 µg).

several IgE-binding components with molecular masses ranging between 30 and 45 kDa (Figure 1). No inhibition of the IgE-binding to these bands was observed preincubating patient's serum with mustard extract (500 µg).

The clinical history and the results of the allergologic work-up disclosed that the patient had had an IgE-mediated anaphylactic reaction to cauliflower. To the best of our knowledge, this is the first case report of anaphylaxis caused by this vegetable. Thereafter, he has been able to eat rice, paella, green beans and peppers without any ill effect. He strictly avoids eating cauliflower and cabbage.

Discussion

Cauliflower belongs to the family *Cruciferae*, genus *Brassica*, var. *Botrytis*. Other members from the same family have allergologic interest, such as cabbage, mustard, broccoli and rape. Anaphylaxis caused by *Cruciferae* vegetables, particularly mustard, is well

known. Widstrom et al [1] found specific serum IgE to vegetables from the Brassica family in a woman who had experienced anaphylaxis caused by mustard. Blaiss et al [2] described positive skin prick tests with mustard, cauliflower and broccoli in an atopic 21 year-old woman who had anaphylaxis to cabbage. Allergenic activity was demonstrated by RAST-inhibition in two fractions of the cabbage extract: an intermediate molecular weight fraction (between 67-45 kDa) and a small molecular weight fraction (<45 kDa) [2]. Oilseed rape dust has been reported as a cause of occupational asthma among workers of the grain industry [3]. This seed contains two kinds of important nutritional proteins: globulins or *cruciferins* and albumins or *napins*. Albumins are more allergenic than globulins, above all Bra n III (an isoform of Bra n 1), that shows allergenic cross reactivity with mustard major allergen (Sin a 1) [4]. Further studies are needed to characterize cauliflower allergens.

References

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