

Letter to the editor

Anaphylactic reaction to lupine flour because of a primary sensitization

Recently, Quaresima et al. (1) reported in this journal on two atopic patients complaining of oral allergy syndrome following lupine ingestion, however, denying the symptoms associated with peanut or other legumes. The complete inhibition of lupine-specific IgE by lupine extract (95%) vs the partial inhibition only by peanut extract (65% and 75%), together with the case history, strongly supported the hypothesis of a sensitization to lupine but not related to peanut allergy. Unfortunately, the authors were not aware of our publication from the year 2004 in which we presented a case of lupine allergy with isolated sensitization to lupine seeds (2).

Because of the high protein and lipid content, lupine flour is extensively used in the food industry. It is added to cereal flours and used as an emulsifier. Concomitant with the increasing intake of lupine, a rising prevalence of allergic reactions after ingestion as well as inhalation of lupine flour has been observed (3–12). Lupine (*Lupinus albus*) belongs to the family of the legumes (*Leguminosae*) and, therefore, demonstrates strong cross-reactivity with peanuts, chickpeas and white beans. In our previous paper (2), we presented two patients with an anaphylactic reaction to lupine.

The first patient, a 24-year-old law student with allergic asthma in childhood and with known severe peanut allergy, reacted after

eating a pizza with severe respiratory symptoms, which required intubation in the emergency room. Our investigations revealed that the pizza dough used in this 'Take-away' pizza was enriched with lupine flour (not declared). The sensitization to lupine could be proven by means of the skin prick test (SPT) with native lupine flour and also serologically as 44.30 kU/L (class 4) of specific IgE-antibodies were measured by means of CAP-FEIA to lupine seed (f335; Phadia, Sweden). A peanut contamination of the pizza was excluded by the manufacturer as well as by analysis in an immunoassay. IgE-binding to major proteins at 20, 34, 60 and 62 kDa was detected by means of immunoblotting. In the inhibition experiments, IgE-binding to lupine proteins was partially inhibited by peanut extract.

The second patient, a 27-year-old female, experienced an allergic reaction including oedema in the face and abdominal pain after ingestion of gingerbread that was declared to contain lupine flour. Apart from a slight pollinosis in childhood, the patient had no history of allergic reactions and no history of food allergy at all. She revealed a positive reaction to lupine flour in SPT and was positive for specific IgE against lupine flour in CAP-FEIA (class 3, 7.59 kU/L). The immunoblot analysis shows IgE-binding to a major protein at 50 kDa and to minor proteins of low

molecular weight. In contradistinction to the first case, the IgE-binding to lupine flour was not inhibited by peanut extract.

On the basis of our observations in the two patients and further cases described in the literature we concluded that allergic reactions to lupine can be mediated by cross-reacting IgE-antibodies to peanut, chickpea and white beans or may occur on account of an isolated ingestive sensitization as well. Because of the increasing use of lupine flour in the food industry and its high allergenic properties, we claimed that lupine flour should be regarded as a highly allergenic food and, therefore, should be added to the list of allergenic foods of the EU and Swiss Food Regulation that have to be mandatory declared.

Meanwhile, according to the COMMISSION DIRECTIVE 2006/142/EC of 22 December 2006 amending Annex IIIa of Directive 2000/13/EC of the European Parliament and of the Council listing the ingredients which must under all circumstances appear on the labelling of food-stuffs, lupin (and molluscs) should be added to the list in Annex IIIa of Directive 2000/13/EC.

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