



**Figure 1** IgE-Immunodetection over an extract of gladiolus flower (1), leaf (2), and stalk (3).

Lanes (–): negative control incubated with buffer; Lanes (+): patient's serum. Molecular weight markers are indicated in kDa.

case of a florist with rhinoconjunctivitis and asthma due to sensitisation to *Freesia*, which is from the same family as the gladiolus. Ordoqui<sup>6</sup> reported a case of a florist, who has worked with plants for 18 years. He refers respiratory symptoms upon exposure to gladiolus and carnation, with positive prick test to these plants, specific IgE by ELISA on patient serum, and positive bronchial challenges. The immuno-blotting showed two proteins of 40 and 47 kDa on carnation extract, but nothing for the gladiolus extract.

In order to determinate the prevalence of occupational asthma and sensitisation to workplace allergens in greenhouse flowers and/or ornamental plant growers, Monsó<sup>7</sup> et al. studied a population of 39 growers, and found three cases of occupational asthma. The growers were sensitised

to various moulds in one case; to *gladiolus spp.* in the second; and to *Aspergillus* and different flowers (including gladiolus) the patient cultivated in the third.

In summary, we present a case of rhinoconjunctivitis and asthma due to sensitisation to gladiolus proteins, and on the basis of in vitro test, we identified three proteins of 70, 52 and 21 kDa. as the main allergens causing sensitisation in this patient, data which, to the best of our knowledge, have never been reported.

## References

1. Axelsson IG, Johansson SG, Zetterström O. A new indoor allergen from a common non-flowering plant. *Allergy*. 1987;42:604–11.
2. Axelsson G, Skedinger M, Zetterström O. Allergy to weeping fig - a new occupational disease. *Allergy*. 1985;40:461–4.
3. Twardowsky CA, Teive HA, Siquineli F, Ditzel Filho L, Entres M, Twardowsky A, et al. Trigeminal sensory neuropathy and facial contact dermatitis due to Anthurium sp. *Arq Neuro-Psiquiatr*. 2007 Sep;65(3b):858–64.
4. Gleeson P, Clarke E. Antigenic determinants of a plant proteoglycan, the gladiolus style arabinogalactan protein. *Biochem J*. 1980;191:437–47.
5. Van Toorenenbergen AW, Dieges PH. Occupational allergy in horticulture: demonstration of immediate-type allergic reactivity to freesia and paprika plants. *Int Arch Allergy Appl Immunol*. 1984;75:44–7.
6. Ordoqui E. *Rinitis y asma ocupacional por sensibilización a gladiolo y clavel*. In: Sesiones interhospitalarias Sociedad Madrid-Castilla La Mancha de Alergología e Inmunología clínica. Curso 1993–94. Madrid: Luzán 5, S.A. de Ediciones; 1994. p. 169–77.
7. Monsó E, Magarolas R, Badorrey I, Radon K, Nowak D, Morera J. Occupational asthma in greenhouse flower and ornamental plant growers. *Am J Respir Crit Care Med*. 2002;165:954–60.

A. Sansosti

*Hospital Universitario "Virgen De La Arrixaca", Carretera Madrid-Cartagena S/N (EL Palmar) CP 30120, Murcia, Spain*  
E-mail address: [agu.sansosti@gmail.com](mailto:agu.sansosti@gmail.com).

doi:10.1016/j.aller.2010.04.008

## Anaphylaxis caused by honey ingestion in an infant

To the Editor,

Anaphylaxis is an emergency state and its prevalence has been increasing during childhood, especially in industrialised countries. The most common causes of anaphylaxis are foods, drugs and hymenoptera venom in children.<sup>1</sup> Anaphylaxis caused by honey is a very rare condition. We reported a case of an infant with anaphylaxis occurred by ingestion of honey.

A 14-month-old boy presented with anaphylaxis after honey ingestion. He was given as much as one teaspoon of honey for several times until he was six months old. When he

was 14 months old, his mother gave him approximately five teaspoons of honey. After five minutes, his lips were swollen and within 10 minutes urticaria, angio-oedema, cough and wheezing occurred. He was taken to a primary medical centre immediately. Systemic corticosteroid and antihistamines were administered. He was referred to an allergy centre for further evaluation.

He came to our hospital one week after the anaphylactic reaction. His physical examination and routine laboratory analyses were normal at admission. Previous history revealed that he had had acute urticaria when he was six months old without any identified aetiology which resolved spontaneously in a few days. His mother and grandfather both have perennial allergic rhinitis, asthma, and house dust mite sensitivity. Specific IgE against *Apis mellif-*

era, *Vespula* species, common food and inhalant allergens were normal. Five weeks after anaphylaxis, prick-to-prick skin test was performed for the honey that was eaten and for another two species which are frequently consumed in our country. Honey which was eaten was found positive, flower honey was negative, and honey composed of mixed flower and pine honey was weak positive. Skin prick tests with common pollens and pinus pollen were also negative. His parents were informed about honey allergy and the importance of honey avoidance. Epinephrine otinjection kit 0.15 mg was prescribed and parents were educated for its usage.

Food allergy is a common disease affecting children more than adults. Allergic food reactions typically develop in early childhood.<sup>2</sup> Most allergic food reactions are immunoglobulin (Ig) E-mediated and involving the skin, gastrointestinal (GI) and respiratory systems. These reactions range from mild skin symptoms to severe anaphylactic reactions. Cow's milk, hen's egg, peanuts, tree nuts, and sesame seeds account for most food-induced allergic reactions in young children.<sup>3</sup> Honey contains a large number of components derived from bees, such as gland secretions and wax, as well as from substances related to their foraging activity such as flower nectar and pollens.<sup>4</sup> Only case reports and case series of honey allergy with limited number of patients have been reported in adults. Anaphylaxis caused by honey ingestion has been reported in patients who have suffered from allergic rhinitis or bee venom hypersensitivity.<sup>5</sup> In these cases, anaphylactic reaction was developed by honey ingestion obtained from bees foraging on flowers of which these cases were also sensitised to their pollens.<sup>6,7</sup> On the other hand, in a study including individuals sensitised to *artemisia* (mugwort- in compositae family), food hypersensitivity rate was found to be 23.7% and 60% of these cases who were sensitive to food and *artemisia* pollen were also sensitive to honey.<sup>8</sup> In another study including five cases which were described as allergic to honey, four of them had negative prick-to-prick test with honey and skin prick test with pollens. It is suggested that some reactions caused by honey might be due to intolerance or non IgE-hypersensitivity especially in non-atopic people.<sup>9</sup> For the diagnosis of food allergy, obtaining a proper history is critical. In addition, several in vitro and in vivo measurements are available. The gold standard test is still a standardised oral provocation or food challenge test.<sup>2</sup> In our case, specific IgE against bee venoms (*apis mellifera*, *vespula* species), common food antigens (milk, egg, soy bean, wheat, fish and peanut) and inhalant allergens (including pollens of grass, trees) were negative. Prick-to-prick test was performed for different honey species including honey eaten by our patient. Only the test performed with the honey eaten by him was positive, consisting of pine honey. One of the honey species was weak positive and the other was negative. The latter was flower honey. Honey causing weak skin test positivity was composed

of pine and flower honey mixture. Skin prick test was negative for pollens including *Artemisia*, pine, and grass. We could not perform oral challenge to confirm the diagnosis considering the life threatening food reaction history.

Tolerance is commonly seen in food allergic infants. Food allergies that are often outgrown are milk, soy, wheat and egg. Tolerance for other foods such as fish, peanut, nuts e.g. is uncommon.<sup>2</sup> Honey allergy in infancy has not been reported, so development of tolerance to honey is as yet unknown.

Only a few adult cases have been reported about anaphylaxis occurred by honey. We could not find any sensitivity to pollens and bee venoms in our patient. To the best of our knowledge this is the first infant who had anaphylaxis caused by honey in the literature.

## References

1. Young MC. General treatment of anaphylaxis. In: Leung DYM, Sampson HA, Geha RS, Szefer SJ, editors. *Pediatric Allergy, Principles and Practise*. St. Louis: Mosby; 2003. p. 643–54.
2. Eigenmann PA, Beyer K, Burks AW, Lack G, Liacouras CA, Hourihane JOB, et al. New visions for food allergy: An iPAC summary and future trends. *Pediatr Allergy Immunol*. 2008;19 Suppl. 19:26–39.
3. Lack G. Clinical practice. Food allergy. *N Engl J Med*. 2008;359:1252–60.
4. Bauer L, Kohlich A, Hirschwehr R, Siemann U, Ebner H, Scheiner O, et al. Food allergy to honey: pollen or bee products? Characterization of allergenic proteins in honey by means of immunoblotting. *J Allergy Clin Immunol*. 1996;97:65–73.
5. Helbling A, Peter C, Berchtold E, Bogdanov S, Müller U. Allergy to honey: relation to pollen and honey bee allergy. *Allergy*. 1992;47:41–9.
6. Karakaya G, Kalyoncu AF. A case of anaphylaxis due to rose pollen ingestion. *Allergol Immunopathol (Madr)*. 2003;3:91–3.
7. Fuiano N, Incorvaia C, Riario- Sforza GG, Casino G. Anaphylaxis to honey in pollinosis to mugwort: a case report. *Eur Ann Allergy Clin Immunol*. 2006;38:364–5.
8. Garcia Ortiz JC, Cosmes PM, Lopez-Asunsolo A. Allergy to foods in patients monosensitized to *Artemisia* pollen. *Allergy*. 1996;51:927–31.
9. Karakaya G, Kalyoncu AF. Honey allergy in adult practice. *Allergol Immunopathol (Madr)*. 1999;27:271–2.

T. Tuncel\*, P. Uysal, A. Babayigit Hocaoglu, D. Olmez Erge, F. Firinci, O. Karaman, N. Uzuner

*Dokuz Eylul University Hospital, Department of Pediatrics, Division of Allergy, Balçova, 35340, Izmir, Turkey*

\*Corresponding author.

E-mail address: [tuba.tuncel@deu.edu.tr](mailto:tuba.tuncel@deu.edu.tr) (T. Tuncel).

doi:10.1016/j.aller.2010.04.007