

IgE-mediated hypersensitivity to custard-apple

THE CUSTARD-APPLE is a tropical fruit belonging to the Annonaceae family. It originated in Central America, but it is now cultivated in southern Europe, where it is commonly consumed (1). Hypersensitivity to this fruit seems to be infrequent, only one case having been previously reported (as an abstract) (2).

■ A 41-year-old man experienced a generalized reaction with pruritus, urticaria, facial angioedema, dyspnea, dysphagia, and dysphonia a few minutes after eating one custard-apple. He required emergency-room treatment with parenteral antihistamines and corticosteroids for 24 h. He had tolerated custard-apple ingestion before. The patient had a previous history of rhinoconjunctivitis and bronchial asthma due to pine wood dust and diisocyanates and sensitivity to metabisulfite. Since the reaction, he has ingested all kinds of fruits, including other exotic ones such as mango, kiwi, and avocado, without problems, but has avoided custard-apple.

■ The custard-apple extract was prepared from a fresh custard-apple without seeds at a 20% w/v ratio. The fruit was crushed and extracted by shaking for 1 h at room temperature in ammonium bicarbonate 50 mM, pH 8. After centrifugation for

30 min at 20 000 g, the supernatant was filtered and dialyzed against water. The dialyzed product was filtered again, lyophilized, and stored at 4°C until use. The total protein concentration in the extract measured by the method of Lowry et al. was 1.30 mg/ml (3). Extracts were reconstituted to 10 mg/ml in PBS-glycerol for prick tests and to 1 mg/ml in phosphate buffer, pH 8, for binding to cellulose CNBr-activated disks.

*A rare case of
IgE-mediated allergy
leading to generalized
urticaria and dyspnea.*

The prick technique was performed with common airborne allergens and foods, extracts from Abelló ALK (Madrid, Spain) and our extract being used. Histamine phosphate (10 mg/ml) and saline were used as positive and negative controls, respectively. The tests were read after 15 min and were considered to be positive when eliciting a wheal at least 3 mm greater than the negative control.

The serum concentration of total IgE was determined by the immunoenzymatic method, ALASTAT (DPC, Los Angeles, CA, USA). Specific

IgE in patient sera was measured by RAST using paper disks activated with CNBr conjugated with custard-apple extract, by the method of Ceska et al. (4). SDS-PAGE was performed in acrylamide mini-gels (12% acrylamide-resolving and 4% stacking) by the discontinuous system described by Laemmli (5). Specific IgE detection by immunoblotting was performed after transfer by a diffusion method (6).

Routine skin prick tests with aeroallergens and foods were positive for grass and *Artemisia* pollens and negative for all other allergens tested. Skin prick tests with fresh custard-apple (prick by prick) and custard-apple extract proved positive (wheal of 6 × 7 mm and erythema of 20 × 18 mm), but they were negative in 10 control patients.

Total IgE was elevated (512 IU/ml). We could not detect specific IgE against custard-apple by RAST. This could have been due to the difficulty in coupling the proteins (such as the relevant allergens) to cellulose disks. SDS-PAGE of the custard-apple extract revealed the presence of a 20–25-kDa band. This protein bound specific IgE, as shown by immunoblotting.

■ From the results of the skin tests and immunoblotting, we have identified the custard-apple as the cause of an IgE-mediated hypersensitivity reaction. To our knowledge, only one case has been previously reported. Its authors suggested an IgE-mediated mechanism, in view of the clinical findings and the positive skin prick tests, but *in vitro* tests were not carried out.

Key words: Annonaceae; custard-apple; food allergy; hypersensitivity; IgE.

M. A. GONZALO*, I. MONEO, P. VENTAS, F. POLO, J. M. GARCÍA

*Hospital Infanta Cristina
Sección de Alergología
Carretera de Portugal s/n
06080 Badajoz
Spain
Tel. 34 24 21 8100
Fax: 34 24 21 8110

Accepted for publication 15 January 1997

Copyright © Munksgaard 1997

ALLERGY 1997;52:597

REFERENCES

1. Mabberley DJ. Annonaceae. In: Heywood VH, editor. Flowering plants of the world. Oxford: Oxford University Press, 1978:30-1.
2. Velázquez E, Muñoz FJ, Sánchez C, Monteseirín FJ, de la Calle A, Conde J. Custard-apple hypersensitivity. *Allergy* 1995;50 Suppl 26:231-2.
3. Lowry OH, Rosebrough NJ, Farr AL, Randall RJ. Protein measurement with the Folin phenol reagent. *J Biol Chem* 1951;193:265-75.
4. Ceska M, Eriksson R, Varga JM. Radioimmunosorbent assay of allergens. *J Allergy Clin Immunol* 1972;49:1-9.
5. Laemmli UK. Cleavage of structural proteins during the assembly of the head of the bacteriophage T4. *Nature* 1970;227:680-5.
6. Moneo I, Alday E, Sánchez-Agudo L, Curiel G, Lucena R, Calatrava JM. Skin prick tests for hypersensitivity to α -amylase preparations. *Occup Med* 1995;45:151-5.

This document is a scanned copy of a printed document. No warranty is given about the accuracy of the copy. Users should refer to the original published version of the material.