

Partial cross-reactivity between latex and banana allergens

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M'Raihi et al.¹ recently reported on a patient with sensitivity to both banana and latex, suggesting cross-reactivity between these two allergens. This was of interest to us because of our recent study of banana-specific IgE and our research on anaphylaxis to latex.^{2,3} We further evaluated the cross-reactivity between banana and latex allergens using sera from individuals sensitive to both latex and banana.

PATIENTS IN THE STUDY AND METHODS

Twenty-four patients' sera were evaluated. Twelve of the sera studied had previously been found to have IgE specific to banana, during studies of banana and ragweed allergen cross-reactivity.² The other 12 samples came from patients with histories consistent with anaphylaxis to latex, whose sera had been found to have latex-specific IgE, as determined by RAST assay.³ It was not possible to perform skin tests on any of the patients.

Latex extract was prepared, as previously reported,³ with use of crude latex from Killian, Inc. (Akron, Ohio). The supernatant, from centrifugation of the crude latex, was dialyzed to remove ammonia and used as crude latex extract. Banana extract was prepared as previously described and then concentrated approximately 10-fold in a YM1 Diaflo Filter apparatus (Amicon, Danvers, Mass.).⁴

The 12 banana positive sera samples were tested for latex-specific IgE by use of a previously described ELISA, except that a chromogenic substrate was used.^{3,4} The wells were coated with the latex extract diluted 1:100 in 60 mmol/L, pH 9.8, coupling buffer. Sera from the 12 patients with IgE specific to latex in a RAST were screened for IgE to banana in the ELISA by use of wells coated with banana extract.⁴

Inhibitions were performed with 3 of the 12 banana positive sera samples on banana coated microwell strips with use of either latex or banana extracts, as previously published.⁴ The banana positive sera were incubated overnight at 4° C with equal volumes of unconcentrated banana or latex extract. The mixtures of sera and antigen were then tested for banana-specific IgE by ELISA. Three of the 12 latex-RAST positive sera were also tested for inhibition with latex and banana extracts (unconcentrated and concentrated)

TABLE I, A. Results of testing three banana positive sera for inhibition by banana or latex extracts in a banana ELISA

Patient	Percent inhibition produced by banana extract	Percent inhibition produced by latex extract
1	61.5	79.6
2	28.6	57.0
3	47.0	42.6

on crude latex coated strips. Inhibitions were also done with both banana and latex extracts with use of RAST methods as reported.³ Aliquots of each patients' serum were incubated overnight with equal volumes of concentrated banana extract, latex extract, or with 5% fetal calf serum in saline. The RAST was completed by use of the double overnight procedure per the manufacturer's directions (Pharmacia Phadebus RAST; Pharmacia Ltd., Woerden, The Netherlands). Percent inhibition was calculated for both ELISA and RAST by comparing the results of serum mixed with antigen or saline.

A patient's serum sample was considered to be latex or banana positive if the specific IgE in the RAST or ELISA was 300% or greater of the result obtained from a negative control serum pool consisting of serum from more than 20 nonallergic adults, negative if less than 150% of negative control, and indeterminate if 150% or greater but less than 300%. Inhibition greater than 20% was considered significant.

RESULTS

Ten of the 12 banana positive sera were positive for latex-specific IgE, and two were indeterminate in the ELISA. A significant correlation existed between the binding of these 12 sera to banana and latex coated strips, $r = 0.6$, $p = 0.04$. Binding of three banana positive serum samples to banana coated strips were inhibited by the latex extract (Table I, A). None of the sera from the 12 patients positive for latex had detectable specific IgE to banana in the ELISA. The binding of four latex positive sera to latex could not be inhibited by either the unconcentrated or concentrated banana in the ELISA.

When the nine sera, most highly reactive to latex in a RAST assay, were studied with RAST inhibition,

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TABLE I, B. Results of testing latex positive sera for inhibition by concentrated banana or latex extract in a latex RAST

Patient	Percent inhibition produced by banana extract	Percent inhibition produced by latex extract
1	46.0	85.0
2	56.0	58.2
3	26.9	67.7
4	29.5	ND
5	25.0	ND
6	-7.0	ND
7	22.0	ND
8	7.7	ND
9	2.0	42.0

ND, Not done.

the concentrated banana extract produced inhibition of 22% to 56% with six of the nine sera (Table I, B).

CONCLUSIONS

Our study confirms in 16 of 24 patients the single case report of M'Raihi et al. of cross-reactivity between latex and banana allergens. The 16 sera were 10 banana-ELISA positive sera which were also latex-ELISA positive and six latex-RAST positive sera which were inhibited by banana extract. It is inter-

esting that all our banana positive sera had detectable IgE specific to latex, whereas none of our latex positive sera had detectable banana-specific IgE in the same assay. This suggests there is only partial cross-reactivity between these two allergens. Limited cross-reactivity is also suggested by the fact that even after 10-fold concentration, banana extract could only partially inhibit the binding of six of nine latex positive sera to latex in a RAST. The results of the inhibiting banana positive sera with latex might have been less impressive if sera had been available from individuals with clinical histories of anaphylaxis from banana contact. In light of the increasing concern about latex-induced anaphylaxis, the cross-reactivity between banana and latex allergens may be clinically important. Physicians evaluating patients should keep the possibility of banana and latex cross-reactivity in mind.

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Acute nonlymphocytic leukemia in systemic mastocytosis with biclonal gammopathy

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Systemic mastocytosis is a hematologic disease characterized by widespread infiltration of mast cells into multiple organ sites.¹ This disease has been found to be associated with abnormal prebeta-lipoproteins, oligoclonal immunoglobulins, and malignancy, especially in adults.^{1,2} We presented a case in "Allergy Grand Rounds" concerned with lymphadenopathic mastocytosis in this patient with biclonal gammopa-