

Anaphylaxis to ackee fruit

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Ackee (*Blighia sapida*) is a tropical fruit, which is native to West Africa and was introduced into Jamaica in 1778 by the famous Captain Bligh. The ackee tree has been planted by Jamaicans living in many countries, including the Bahamas, Cuba, and Costa Rica. Canned ackee is exported to the United States to meet the demand of Jamaicans who have immigrated here.¹ Ingestion of unripe ackee fruit has been known to cause vomiting, weakness, drowsiness, coma, and even death. These manifestations are associated with severe hypoglycemia and acidosis, caused by the presence of the toxic chemical hypoglycin A in the arils of the unripe fruit.^{1,2} Once the fruit has fully ripened, it can be consumed without ill effect.¹

Though thousands of cases of toxicity have been reported as a result of the ingestion of unripe ackee fruit, IgE-mediated allergic reactions to this fruit (e.g., urticaria, wheezing, anaphylaxis) have not yet been described. We report two cases of ackee allergy confirmed by *in vivo* and *in vitro* testing.

CASE HISTORIES

Case 1

A 47-year-old woman experienced a tingling sensation in her face, followed by angioedema of her tongue, chest tightness, and brief loss of consciousness after eating a lunch consisting of codfish, ackee, and rice. The patient was treated with subcutaneous epinephrine and intravenous Benadryl and Solu-Medrol. She was subsequently hospitalized for continued administration of these medications. The patient reported similar reactions after eating mango and sunflower seeds but denied eating these foods on that day. She had a history of anaphylaxis after receiving an intramuscular injection of penicillin

and a long history of allergic rhinitis with immediate hypersensitivity reactions to dust mites and pollens.

Case 2

A 33-year-old Jamaican woman had urticaria on her extremities 20 minutes after eating ackee fruit on two separate occasions. She reported a history of urticaria after eating pork but denied any other food allergies. She had a history of seasonal allergic rhinitis for which she had been treated with immunotherapy.

LABORATORY INVESTIGATION

An ackee extract was prepared by filtering the juice from canned ackee through a Millipore filter (0.8 μ m; Millipore Corp., Bedford, Mass.). Serial 10-fold dilutions of the ackee juice were then prepared. Immediate hypersensitivity prick puncture skin testing was performed with the ackee juice dilutions and with appropriate negative and positive controls.

Patient 1 had a 2 mm wheal and 10 mm flare in response to a 1:1000 dilution of ackee extract. A 1:100 dilution of ackee extract resulted in a 10 mm wheal with pseudopods and a 40 mm flare, and the patient complained of nasal congestion. Results of prick puncture skin tests with codfish and rice were negative.

Patient 2 had a 5 mm wheal and 25 mm flare in response to undiluted ackee extract. Results of prick puncture skin tests with undiluted ackee extract were negative in five control patients with no history of ackee exposure.

Immulon micro ELISA plates from Nunc (Roskilde, Denmark) were coated with ackee fruit extract at a concentration of 200 mg/ml in carbonate buffer. An ELISA was performed according to standardized methods^{3,4} to measure the serum IgE antibody titer. The optical density of each well was read at 405 nm in a Biotek Model EL-312 automatic reader (Biotek, Inc., Winooski, Vt.). Each assay was performed in duplicate, and results were averaged. The end points for the ELISA titer were the last titers at which the test serum had an optical density reading that was at least twice that of the mean of two nonatopic control sera. Both patients had IgE antibody titers greater than 1:50 (Fig. 1).

Serum from patient 1 was used to demonstrate inhibition of IgE by ackee fruit. The serum was diluted 1:2 and mixed with either ackee fruit, beef insulin, or mango at concentrations of 10 μ l/ml, 500 μ l/ml, and 1000 μ l/ml before it was added to the wells. Assays similar to the

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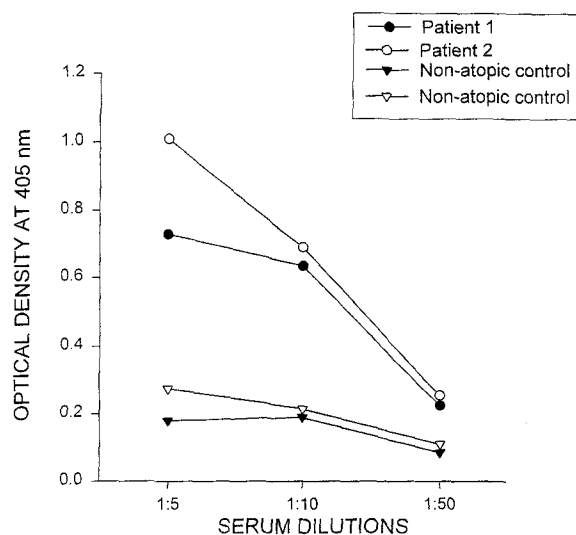


FIG. 1. IgE antibody titer to ackee fruit as determined by ELISA in patient 1, patient 2, and two nonatopic control subjects.

previously described ELISA were performed. Complete inhibition was achieved with ackee fruit extract but not with mango or bovine insulin.

DISCUSSION

Toxic reactions after ingestion of unripe ackee fruit are well known potential complications. The two patients presented in this report illustrate the potential for life-threatening IgE-mediated allergic reactions to this fruit as well. Physician awareness of possible life-threatening allergic reactions is especially important in areas with large Jamaican populations where ackee fruit has been included in many native dishes.

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