

# Hypersensitivity reaction to jicama (*Pachyrhizus*, yam bean)

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*This article presents the first known case of allergic reaction to jicama, confirmed by allergy skin testing.*

## INTRODUCTION

During the past decade a number of new foods have been introduced into the American diet. These include kiwi<sup>1</sup> and pine nuts<sup>2</sup>, which have been associated with immediate hypersensitivity reactions (IgE mediated). Another new food, jicama, has been gaining popularity even though many may never have heard of it.

This is a report of a patient who reported two episodes of allergic reactions to jicama, a vegetable, traditionally popular in Mexico and Central and South America.

## CASE REPORT

A 40-year old man who had been a patient for the previous one and one-half years had had allergic rhinitis, mild in the spring and severe in late summer. He also had had exertional asthma. Allergy scratch testing had revealed 4+ reactions to cat and dog; 3+ reactions to dust, mites, trees, grass; 2+ reaction to ragweed and negative reactions to egg, milk, wheat, and peanut. Intradermal testing disclosed 4+ reaction to buckwheat; 3+ reactions to peanut, soybean, almonds, and coconut; and 2+ reactions to green beans, navy beans, carrots, cashews, codfish, sweet and white potato, black walnuts, and halibut.

There was no history of food allergy until he noticed itching of his scalp and upper body a half hour after eating raw sliced jicama with a vegetable dip. His face became warm and red. He developed gen-

eralized urticaria, severe abdominal cramping, diarrhea, and labored breathing with wheezing for which he inhaled albuterol and took an Actifed tablet. Abdominal cramping and vomiting continued. Three and one-half hours later, he took another Actifed tablet and went to sleep for four hours. When he awakened, symptoms had resolved.

A few weeks later, he ate dinner at a friend's home. Cooked jicama was one of the foods he ate unknowingly. He began to experience the same symptoms, only in a milder form, starting with itching of the scalp. He immediately took an Actifed tablet. Symptoms resolved within six hours.

## METHODS

An aqueous extract was prepared from 20 g of the flesh of the tuber of a jicama (Fig 1), sliced and added to 20 ml of Hollister-Stier phenol-saline diluent and allowed to stand overnight in the refrigerator. It was filtered through a #1 filter paper and the filtrate was labeled a 1:1 concentrate (unsterile). This was diluted 1:10 for scratch testing.

## RESULTS

Prick testing on two separate occasions disclosed markedly positive reactions to jicama. The peak reaction in the second testing produced an area of erythema 2 × 3 cm and an area of whealing and induration of 6 to 7 mm with pseudopods (Fig 2). The control diluent test was negative both times. The histamine control was moderately positive at the time of the first test measuring 3 mm in diameter and negative at the time of the second test.

A group of 20 individuals, randomly selected, was prick tested with the 1:10 jicama extract. All tests were negative.

## DISCUSSION

A Medline search for hypersensitivity to jicama did not reveal any reported cases. A search of the botanical and nutritional literature revealed a great deal of interesting information about jicama.<sup>3-7</sup> It falls into a botanical classification of *Pachyrhizus*. The derivation of the name is from the Greek pachys meaning thick and rhiza, denoting root (thick root). The plants grow as a perennial vine, often 15 to 20 feet tall. The edible portion is a large tuberous underground root, shaped like a beet or turnip. There are subclassifications of *Pachyrhizus* that include *erosus* (yam bean) and *tuberosus*. The *Pachyrhizus* belongs to the Leguminosae family of vegetables.

This patient had many positive reactions to members of the legume family of foods (peanut, soybean, green beans, and navy beans), but he did not recognize any adverse clinical symptoms from the ingestion of these foods.

*Pachyrhizus erosus* (yam bean) is native to Mexico and Central and South America. Its season of growth is May to October. It requires deep, fertile, well-drained soil with a great deal of moisture.

As a food it is used primarily raw. The brown skin is peeled off revealing a white, moist inner flesh that appears to have a grainy consistency. It has a rather bland taste.

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Figure 1. Whole jicama and sliced surface.

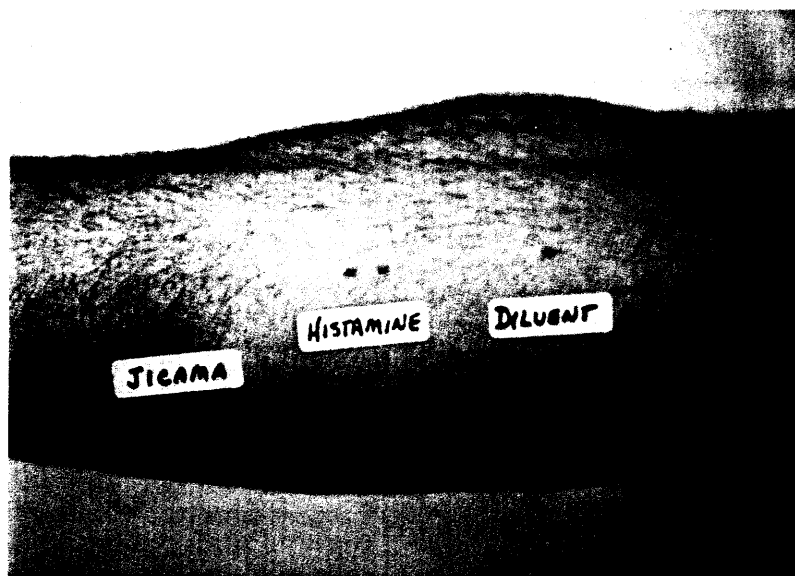


Figure 2. Positive skin test to jicama extract with  $5 \times 7$  mm wheal with pseudopodia and  $2 \times 3$  cm area of erythema.

Sliced, it is used as a snack often with dips. It can be sliced and added to salads with some salt, lime juice, and chili powder. It can be cooked

and used in dishes. Jicama can be baked with meat dishes, like a potato, or even grated and used as a pie filling.

The nutritional value per 100 g serving is as follows:

|              |         |
|--------------|---------|
| Calories     | 41      |
| Protein      | 1 g     |
| Fat          | 0.1 g   |
| Carbohydrate | 9.0 g   |
| Calcium      | 15.0 mg |
| Vitamin C    | 20.0 mg |
| Iron         | 0.5 mg  |

## CONCLUSION

This patient represents one of the first reported and clinically documented cases of jicama hypersensitivity. It is interesting to speculate whether legume-sensitive patients may be at high risk for developing an allergic reaction to jicama.

If its popularity as a food substance increases, more cases of hypersensitivity may appear and a more clearcut relationship to legume sensitivity may be recognized.

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