

Anaphylaxis to Kiwi Fruit and Related "Exotic" Items

Constantine J. Falliers, M.D.*

Allergy and Asthma Clinic, P.C.
Denver, Colorado

INTRODUCTION

In addition to the constantly growing risk of allergic reactions to new man-made substances, many previously inaccessible natural products are increasingly incriminated in serious systemic allergic reactions. Exotic delicacies, now frequently served in the course of relatively "fancy" meals, represent a class of naturally grown foods that appear to be associated with allergic sensitivity reactions, either when handled or when ingested.

Kiwi fruit (*Yang-tao*), or chinese gooseberry (*Actinidia sinensis* or *chinensis*),^{1,2} is currently available in food stores in many countries where it is not indigenous. From the temperate or subtropical regions of the USA, it is regularly transported and distributed to the northern states and elsewhere, having been transplanted to the Americas from the Yangtze River Valley of China and, secondarily from New Zealand, where it acquired the appellation "kiwi fruit."¹⁻³

Successive anaphylactic reactions to kiwi fruit have been reported associated with the handling rather than the ingestion of the fruit by a person with known atopic di-

athesis.³ The present report confirms the allergenic potential of Kiwi fruit and may represent the first published evidence of systemic anaphylaxis resulting from the oral intake of peeled slices of the fruit. Although the patient involved had a medical history of severe asthma in childhood, requiring institutional care, he had been symptom free, without medication for an extended period of time prior to this incident.

CASE REPORT

The patient was a 26-year-old generally healthy and very active male who had severe chronic asthma in childhood and in his sixth year of age spent four months in a specialized medical center, the National Jewish Hospital in Denver, for study and treatment. After discharge, he improved progressively on immunotherapy and symptomatic medication. His last attack of asthma was in 1977, i.e., 4 years before the present episode. Perennial allergic rhinitis, of variable severity, persisted and required symptomatic medication, including occasional systemic corticosteroids. The patient's father had severe seasonal allergic rhinitis and improved under specific immunotherapy. The mother has had asthma

*Address reprint requests to: Dr. Constantine J. Falliers, Allergy and Asthma Clinic, P.C., 155 Cook Street, Denver, Colorado 80206.

since the age of 18 years, and a brother, 10 years older than the patient, had some asthma starting at the age of 9 years but no significant problems after adolescence. There was no personal or family history of urticaria or of systemic anaphylaxis.

The patient worked as a supervisor of a high quality catering service in Denver and he, or his assistants, often served kiwi fruit with salads and desserts. However, he had no recollection of ever tasting it until November 9, 1981, when he ate some of the "leftovers" of the company's servings for lunch. Within 15 min after the ingestion of two slices of kiwi his throat and ears began to itch and this was followed by swelling and tearing of the eyes and a few minutes later he experienced hoarseness and swelling of the tongue and lips. No rhinorrhea was noted and no wheezing was present. On examination hyperemic conjunctivae and edematous eyelids were noted. There was no evident edema in the oral cavity, soft palate or larynx but the patient's voice was distinctly altered. There were no cardiopulmonary, circulatory, or other abnormal findings. After two injections of epinephrine and 2.68 mg of clemastine fumarate orally, the symptoms gradually improved over the next few hours. However, the next day the patient complained of increasing nasal congestion and "cold symptoms" and there was evidence of a persistent or delayed systemic reaction. He was advised to continue the antihistamine and in addition he was given a single dose of methylprednisolone 40 mg by injection.

One week after this episode a series of allergy skin tests was performed and were uniformly negative, despite a previous record of strongly positive reactions to numerous indoor inhalants, pollen, and molds. The patient had already discontinued all medications so the lack of skin reactivity was attributed to post-anaphylactic "anergy" rather than pharmacologic suppression. One month later the patient was asked to return and the undiluted pulp of kiwi fruit was applied to the skin following scarification with a triple puncture Sternee-

dle device.* There was an immediate skin reaction, with a 15 mm wheal and 20 mm diameter of erythema within 15 min of the application. Control tests were negative. Three months later, a series of standard allergy skin tests were performed again and showed the 3-4 + large immediate reactions that had been detected 5 and 6 years previously. This confirmed the initial impression that the negative responses following the anaphylactic episode reflected a temporary effect of the systemic reaction to the ingestion of the kiwi fruit.

DISCUSSION

Even though firm and detailed data are not generally available on the frequency of dietary exposure to "exotic" foods among populations of temperate or colder regions of the globe, there is sufficient current evidence to permit the conclusion that what was a rare food item only one generation ago, is now readily available and commonly consumed. The demonstration of a fairly severe anaphylactoid reaction to the ingestion of small amounts of kiwi fruit may serve as a reminder that adverse allergic reactions to uncommon or "fancy" meals can occur. These present problems of (a) immediate medical management and (b) prevention or detection of adverse reactions to the same and to other crossreacting substances.

Kiwi fruit seems to be a relatively new addition to the culinary habits of the inhabitants of the northern regions of both the old and the new world. Its use may have become more widespread in the past decade. It was only in 1981 that a published report appeared of an allergic reaction to it.³ Other substances, which used to be available only in a few isolated regions in the world are

*The value of direct application of the natural allergen on the skin had been previously confirmed with the use of crushed pinion nut which detected the etiology of a severe life-threatening anaphylactic shock following the ingestion of a Polynesian salad, of which the other ingredients had yielded negative reactions on initial testing.

now likely to be consumed by the average city dweller. These include several fruits mostly of tropical origin, spices, nuts and products of the land and sea until recently restricted to a small radius around the place of their origin. In an allergy consultation practice we have personally observed several serious, even life-threatening reactions, which may be worth listing (Table 1). An effort is being made to identify other natural products which may crossreact with those proven to be responsible for anaphylactic reactions. Evidently the subject ought to be explored further, both from the botanical and from the immunologic points of view.

The reported case raises again the question of whether a person with atopic background may be more prone to develop anaphylactic sensitivity to common or uncommon food items. Particularly intriguing is the fact that this patient was a formerly severe asthmatic who did not respond very markedly to institutional care but who gradually improved and, in fact, "outgrew" his asthma.⁴ He was asthma free without medication for several years in contrast to his

perennial bronchoconstrictive problems of his early childhood. An additional noteworthy observation in this case is the loss of immediate wheal-and-erythema type of skin reactivity for several weeks after the anaphylactic episode. Due to the fact that the patient had been repeatedly skin tested in the past and had reacted with unquestionably positive wheal-and-erythema reactions, it was possible to detect the disappearance and then the reemergence of positive reactions when skin tests were again performed three months after the anaphylactic reaction. This indicates that skin testing soon after anaphylactic or generalized urticarial reactions may be unreliable and pointless.

Knowledge of the incidence of serious anaphylactic sensitivity reactions to naturally grown food items (assuming that contamination with chemicals, insecticides, etc., is not the source of the problem) places a more realistic perspective on the public health hazards of food additives, preservatives and also common non-prescription drugs. An enormous amount of time and effort, for instance, has been spent in recent years by the Food and Drug Ad-

Table 1. Allergic Reactions to "Exotic" Natural Foods: A Selected List from Personal Clinical Observations

SCIENTIFIC NAME	COMMON NAME(S)	COMMON FORMS OF INGESTION	CLINICAL REACTIONS
<i>Actinidia sinensis</i> (or <i>chinensis</i>)	Kiwi fruit; chinese gooseberry	Desserts, salads	Anaphylaxis, angioedema
<i>Ananas comosus</i>	Pineapple	Fruit, juice	Contact dermatitis, rhinitis, urticaria
<i>Arbacia punctulata</i>	Sea urchin	Appetizer, soup	Stomatitis, urticaria
<i>Carica papaya</i>	Papaya	Desserts, fruit, juice	Urticaria, colitis
<i>Chelonia</i> (generic)	Turtle	Meat dishes, soup	Urticaria
<i>Cicer arietinum</i>	Chickpea; garbanzo bean	Appetizers, salads, soup	Urticaria, colitis
<i>Ficus carica</i>	Fig	Fruit, jam, cookies	Stomatitis, urticaria
<i>Loligo pealeii</i>	Squid	Appetizers, main dishes, stews	Urticaria
<i>Mangifera indica</i>	Mango	Desserts, fruit, jam, juice	Urticaria, angioedema
<i>Pinus</i> (generic) seeds	Piñon nut	Appetizers, salads, seasoning	Anaphylaxis, angioedema
<i>Punica granatum</i>	Pomegranate	Desserts, juice, salads	Urticaria, rhinitis, asthma

ministration of the U.S. Public Health Service in trying to establish guidelines for warning the public on labels and in advertisements, about the danger of intolerance or hypersensitivity reactions to common doses of aspirin.⁵ Although the prevention of such reactions should be everyone's concern, the occurrence of comparable reactions to an almost endless number of natural food products places the major responsibility for protective measures on the consumer and on those directly involved in individual health counselling, namely, the personal physician in each case.

Obviously it is not always possible to anticipate and prevent anaphylactoid reactions to the ingestion of uncommon and rather infrequently consumed special foods. Nevertheless, the public must be warned of the possibility of such reactions to "exotic" items and medical practitioners must realistically try to keep up with the growing number of vegetable and animal products that have a demonstrated allergenic potential. Indeed, it would seem advisable for one of the national or international organizations concerned with clinical allergy to

prepare an expandable list of the uncommon natural products incriminated in allergic reactions and possibly also to sponsor additional studies aimed at identifying specific allergens and ascertaining the degree of risk for a particular individual or for population subgroups with defined characteristics.

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