

After avoiding exposure to *Gammarus*, the patient improved, reverting to her usual condition (sparse, mild respiratory symptoms).

We report the first case of allergic rhinitis from sensitization to *Gammarus* used as turtle food. The patient, like most seafood-allergic patients in Spain (1), was allergic to *Dermatophagoides*. Cross-reactivity between both species seems to depend on tropomyosin (4), which is the major allergen in Crustaceae. However, in this case, the allergen seemed to be different, in that there was no IgE-binding band of 35 kDa (tropomyosin), that no IgE-binding was detected with shrimp extract, and that the patient tolerated seafood ingestion, as well as exposure to cooking vapors of Crustaceae and Mollusca.

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Accepted for publication 25 October 1999
Allergy 2000; 55:418-419
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ISSN 0105-4538

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Asthma caused by a pet bat

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Key words: bat feces; bronchial asthma; mealworm; respiratory allergy; *Tenebrio molitor*.

● It is known that materials derived from non-Hymenoptera insect species can be potent respiratory allergens. Mealworms, larvae of the beetle *Tenebrio molitor*, are widely used as fishing bait. Allergic bronchial asthma to mealworms has already been described (1).

Four of five bait handlers who were exposed to *T.*

molitor in a

warehouse suffered from IgE-mediated allergic asthma, rhinitis, or contact urticaria. Another report concerns a 26-year-old female animal handler. Her job included feeding the animals *T. molitor* beetles. For years, she had complained of severe work-related symptoms of rhinoconjunctivitis. Specific IgE to extracts from the larvae, pupae, and adult stages of *T. molitor* was demonstrated by RAST (2).

Respiratory allergy to inhaled bat feces is known in African and South American countries. In Sudan, for instance, many asthmatic patients attribute their symptoms to inhalation of bat droppings in their homes. The feces drop through cracks in the ceiling into the rooms below. This material can be inhaled, causing allergic respiratory disorders. Specific IgE antibodies have been shown to bat feces (3).

At our allergy unit, a 31-year-old patient who developed bronchial asthma after occupational exposure to bats (Chiroptera) has been described. Skin tests and RAST with bat allergens confirmed the presence of an IgE-mediated allergic reaction. Because the patient, as a dedicated scientist, could not abandon his contact

with bats, specific immunotherapy with bat-allergen extracts was undertaken. After 1 year of therapy, the patient was free of symptoms while exposed to Chiroptera (4). Positive skin tests and IgE (RAST) to bat feces were also detected in atopic patients living in tall buildings and old houses in Buenos Aires, Argentina (5).

We present here a case of allergic asthma and rhinoconjunctivitis caused by IgE-mediated allergy to the yellow mealworm (*T. molitor*) and at the same time to bat feces. To our knowledge, this is the first report of this combination.

A 29-year-old female zoologist was referred to the allergy unit because of a history of respiratory symptoms for 10 years. In the morning, she complained of rhinitis, conjunctivitis, and coughing. Especially when she stayed at home during the day, asthmatic attacks occurred in the evening. For many years, she had worked with bats. Two years before, she had decided to keep a bat at home; afterward, her symptoms got worse. She fed the bat with mealworms, which are the larvae of the *T. molitor* beetle. Absence from home coincided with decreased severity of the symptoms.

Clinical examination revealed no wheeze on chest auscultation, spirometry was normal, and prick tests to common inhalant allergens, including trees and grass pollen, house-dust and storage mites, molds, and animal epithelia, as well as cow's milk and egg white, were negative. The bronchial methacholine provocation test showed unremarkable bronchial hyperreactivity. A scratch test with the patient's own house dust, especially that collected from the carpet in the living room, was positive. The washed skin of the yellow mealworm and the culture fluid with larvae were strongly positive in the prick-to-prick test. As negative control, the fluid without larvae was negative. The bat's hair and feces were tested as well by prick-to-prick and scratch tests; the first was negative, and the second positive. It is likely that the

IgE-mediated asthma and rhinitis to bat feces and yellow mealworm.

positive scratch test with the patient's own house dust was positive because of contamination with bat feces. Total serum IgE was elevated to 533 kU/l. CAP tests were negative to house-dust mites, *Chironomus*, cockroaches, and animal epithelia, but positive to the grain beetle *Sitophilus granarius* (class 3, 4.3 kU/l). CAP analyses of the larvae and skin of *T. molitor* and bat feces, performed in the Department of Clinical Immunology and Transfusion Medicine at the Karolinska Hospital in Stockholm, Sweden, were dose-related positive with 10, 15, and 81 kU/l, respectively.

In conclusion, occupational exposure to insects and Chiroptera is a frequent cause of allergic disease; laboratory workers are at particular risk of sensitization. For the first time, we describe a patient who was allergic not only to a bat but also to the mealworms it was fed. The question then arises of whether the positive skin test and CAP results with bat feces were due to the content of mealworm antigens in the feces. Unfortunately, the patient refused to undergo further tests; therefore, RAST-inhibition tests were not performed.

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Accepted for publication 16 November 1999
Allergy 2000; 55:418-419
Copyright © Munksgaard 2000
ISSN 0105-4538

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Occupational rhinitis/asthma to courgette

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Key words: asthma; courgette; occupational; rhinitis.

● THE courgette (*Cucurbita pepo*) is a small, cylindrical marrow, with green skin and white pulp. It belongs to the *Cucurbita* family.

Many cases of occupational asthma due to

sensitization to vegetables, such as garlic (1, 2), French bean (3), and asparagus (4), have been described, although we have not found any case of rhinitis or occupational asthma caused by sensitization to vegetable marrow or courgette.

We present the case of a 26-year-old woman who had suffered from allergic rhinitis and bronchial asthma since childhood due to sensitization to moulds, dust mites, rabbit dander, and pollens.

Four years before referral to our section, she had started working in a warehouse specializing in fruits and vegetables, including courgettes. Her job was to pack these foods. When she started handling courgettes, she immediately suffered nasal-ocular pruritus, sneezing, and hydroporrhea, as well as dyspnoea and wheeze when she handled them for more than 3 h. In her job,

the patient was also in contact with peppers, beans, aubergines, lemons, and oranges, showing no clinical reference to these foods. She perfectly tolerated courgette when she ate it.

Cutaneous tests were done by the prick method with a standard battery of pneumoallergens (ALK-Abelló®) that gave a positive result for *Alternaria*, dust mites, rabbit dander, and olive, as well as *Parietaria*, mugwort, *Chenopodium*, and *Salsola* pollens.

We did cutaneous tests with food extracts (Aristegui®): nuts (almond, hazelnut, peanut, and pistachio nut), fruits (peach, apple, pear, strawberry, kiwi, banana, melon, pineapple, orange, and avocado), vegetables (celery and tomato), and paprika, with a positive result for hazelnut and peach, and negative result for the tests related to the other foods.

Later, some cutaneous tests were done with natural courgette, aubergine, pepper, bean, and lemon by the prick-prick method. These tests were positive for courgette and negative for the rest of the foods.

Subsequently, we detected specific IgE for vegetable marrow (*C. pepo*) by the CAP method (Pharmacia®), achieving a positive result of class 2.

A nasal provocation with courgette extract (Aristegui) was done, with a positive result shown by a fall of 57% of peak nasal inspiratory flow and by the appearance of sneezing (7) and moderate hydroporrhea. The patient refused to undergo bronchial provocation with courgette.

We present the first case of a worker suffering from occupational rhinitis and asthma due to courgette. She was sensitized to peach and hazelnut without clinical expression.

It is important to emphasize that the patient began to present nasal-ocular effects as soon as she started working with fruits and vegetables in the warehouse, without the classic period of sensitization. We might speculate that the patient had become

A case of IgE-mediated sensitization to vegetable marrow.