

consumed worldwide in 1989, and demand is so high that these swifts are in danger of extinction (5). This form of allergy has not been reported previously. However, our preliminary work using prepared crude extracts for skin prick tests in 13 bird's nest-allergic children showed positive wheal flare reactions, indicating that these reactions are IgE-mediated (unpublished).

There was a notable absence of peanut or tree nuts triggering reactions in our survey. This is stark contrast to reports of food-induced anaphylaxis in the US population (6, 7), where peanuts and tree nuts were responsible for most fatal and near fatal anaphylaxis. Although peanut allergy has been documented in our population (2), this study suggests that this allergy does not produce severe symptoms requiring emergency treatment. Egg, milk, and crustacean seafood appear to be "universal" foods causing anaphylaxis, and are observed in other populations (6, 8). Although crustacean seafood anaphylaxis was found in older children in this study, this form of allergy is not commonly reported in other pediatric populations. Seafood (shrimp) is a common ingredient in Asian cooking. The types of foods triggering anaphylaxis vary between communities. The documentation of these differences will improve our understanding of food allergy as a whole.

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Occupational asthma caused by esparto grass (*Stipa tenacissima*) fibers

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Key words: *Aspergillus fumigatus*; asthma; esparto; hypersensitivity pneumonitis.

● ESPARTO grass (*Stipa tenacissima*), a gramineous plant found widely in Mediterranean countries, has many uses. Hypersensitivity pneumonitis caused by esparto fibers has been recently described (1). We now present the case of a stucco maker who developed bronchial asthma due to inhalation of esparto fibers.

The patient was a 50-year-old stucco maker, who had been exposed to esparto fibers used in his job since he was 14 years old. For the last 6 years, he had developed ocular itching and

rhinorrhea, as well as shortness of breath, cough, and wheeze after exposure to esparto fibers. Absence from work markedly decreased the severity of symptoms. Clinical examination revealed scattered expiratory wheezes on chest auscultation. White blood cell count was 8200/mm³ with 1110 eosinophils/mm³. Spirometry revealed a FEV₁ of 96% and FVC of 106% of predicted. Total serum IgE was 2052 kU/l. Methacholine PC₂₀ was 1.38 mg/ml.

One sample of esparto fibers provided by the patient was cultured to detect the presence of microorganisms.

Rhizopus sp.,
Penicillium sp.,
and *Aspergillus fumigatus* could be identified.

Skin prick and intradermal tests

performed on the patient with a 1:10 w/v aqueous esparto extract (EE) revealed an immediate positive response. The same tests also showed a positive reaction with a 1:5 w/v *A. fumigatus* extract (AFE). No late responses were observed. Skin tests performed with other mold extract (*Rhizopus nigricans* and *Penicillium notatum*), mite, and pollen allergens were negative (Lab. Abelló SA, Madrid, Spain). Specific IgE antibodies against the EE as well as the AFE were demonstrated in the patient's serum by ELISA (2). Esparto activity was markedly inhibited (59%) by AFE in an IgE-inhibition ELISA performed as previously

Esparto fibers cause not only hypersensitivity pneumonitis but also occupational asthma.

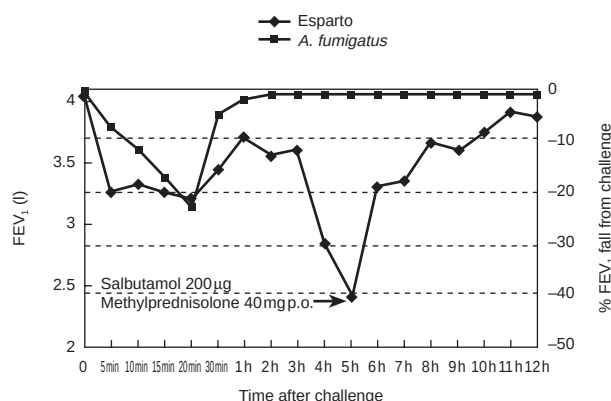


Figure 1.

described (5), whereas no inhibition could be observed with *R. Nigricans* or *P. Notatum* extracts. Precipitating antibodies and specific IgG measured by ELISA (3) against the EE, AFE, *M. faeni*, *T. vulgaris*, hay, and pigeon droppings extracts (Lab. Aristegui, Bilbao, Spain) were not found in the patient's serum.

The patient underwent a bronchial provocation test (BPT) with EE, as previously described (4), resulting in a dual asthmatic reaction. Bronchial challenge performed with AFE showed an immediate response, but not a late reaction (Fig. 1). Four atopic unexposed control individuals and four asymptomatic esparto-exposed stucco makers did not exhibit reaction with any of the tests listed above.

Esparto fibers are widely used in the Iberian Peninsula and other Mediterranean countries for the manufacture of rope, sandals, rush mats, and baskets; it is also used in decorative stucco plates for walls and ceilings and other decorative work in the building industry. Esparto fiber processing includes the manual removal of blades from the plant, followed by "soaking" in water pools for 15–20 days to make it resistant. During this stage, the plant may be contaminated with certain microorganisms such as molds and thermophilic *Actinomyces*, because of favorable moisture and temperature conditions. The mass obtained is then dried, crushed, and combed.

Recently, esparto fibers have been described as a cause of hypersensitivity pneumonitis in stucco makers (1), and *A. fumigatus* was shown to be the causative agent (6). Bronchial asthma due to this fiber has not been previously reported.

An IgE-mediated immunologic mechanism appeared to operate in the patient's asthmatic responses to esparto grass fibers. Skin test and BPT performed on the patient with both EE and AFE gave rise to an immediate response. A late asthmatic reaction was seen after BPT performed with EE, but not AFE. The presence of specific IgE against these two extracts in the patient's serum was demonstrated by ELISA, while a group of unexposed or exposed nonsymptomatic subjects did not react to such tests. We also

found a marked inhibition of the esparto activity by AFE with IgE ELISA inhibition.

In conclusion, we showed that the dust derived from esparto fibers can induce occupational asthma in an exposed subject, and *A. fumigatus* appears to be the causative agent.

Esparto supports a large industry. Further studies are necessary to determine the prevalence of esparto-induced occupational asthma in exposed workers.

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A new apple extract

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Key words: apple; food allergy; oral allergy syndrome; skin testing.

● APPLE is the most frequently reported offending food in birch-pollen-sensitive patients with oral allergy syndrome (OAS) (1) due to homology between the birch-pollen allergen (Bet v 1) and the major apple allergen Mal d 1 (2). Allergens responsible for OAS are mostly unstable and easily denatured by extraction procedures (3); as a consequence, most commercial extracts for skin prick tests (SPT) show very poor sensitivity and are less reliable than fresh fruit for the detection of sensitive patients (4, 5). In this study, we compared a new apple extract for SPT with four conventional apple extracts and with SPT with fresh apple in 35 birch-pollen-sensitive adults (mean 33 years; M/F 11/24) with OAS after eating

apples. Patients underwent SPT with four commercially available apple

The peel extract was useful in SPT diagnosis of pollen-related OAS.

extracts (Lofarma, Milan, Italy; Dome/Hollister-Stier, Spokane, WA, USA; Stallergènes, Fresnes, France; and Allergopharma, Reinbeck, Germany), with fresh Golden Delicious apple (by prick-prick technique), and with a new apple extract (Lofarma: see below). SPT were performed by standard methods; wheals equal to or greater than 2+ were considered positive (6).

Both commercial and new Lofarma apple extracts were prepared from Granny Smith strain apples, using fresh pulp plus peel, or fresh peel only, respectively, which were homogenized at 10% w/v in 0.1 M potassium phosphate buffer, pH 7.0, containing 2% PVPP, 2 mM Na₂EDTA, 7 mM diethyldithiocarbamate (DIECA), and 2.6 mM NaN₃. Homogenate was centrifuged at 18 000 g for 30 min at 4°C. The supernatant of peel extract was dialyzed against NH₄HCO₃ 5 mM at 4°C for 20 h, lyophilized, and resuspended (×10 concentrated) in saline plus phenol 0.4%. The supernatant of the pulp plus peel extract was directly dialyzed against saline plus phenol, since the high content in carbohydrates and pectin did not allow lyophilization and concentration of the