

validated the reliability of the patch test with these drugs. The drug concentration and the use of petrolatum as vehicle have yielded fair results, confirming the conclusions of other authors (7, 9) who obtained better diagnostic results in the patch test by using these vasoactive drugs in petrolatum than in aqueous solution.

Finally, we would like to emphasize that, in dermatitis induced by mixed drug preparations, the successful accomplishment of the patch test with different drugs and excipients may obviate the performance of the oral challenge test with drugs.

Key words: antiepileptic drug; eczematous dermatitis; pseudoephedrine; over-the-counter preparation; patch test; vacuolar interface dermatitis.

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REFERENCES

1. Wilkinson SM, Kingston TP, Beck MH. Allergic contact dermatitis from phenylephrine in a rectal ointment. *Contact Dermatitis* 1993;29:100-1.
2. Milpied B, Fleischmann M, Berre F, Sourisse M, Litoux P. Another case of allergic contact dermatitis from phenylephrine in eyedrops. *Contact Dermatitis* 1988;19:146-7.
3. Bardazzi F, Tardio M, Mariani R, Rapacchiale S, Valenti. Phenylephrine in eardrops causing contact dermatitis. *Contact Dermatitis* 1991;24:56.
4. Villas Martínez F, Joral Badas A, Garmendia Goitia JF, Aguirre I. Generalized dermatitis due to oral ephedrine. *Contact Dermatitis* 1993;29:215-16.
5. Hauken M. Fixed drug eruption and pseudoephedrine. *Ann Intern Med* 1994;120:442.
6. Cavanah D, Ballas Z. Pseudoephedrine reaction presenting as recurrent toxic shock syndrome. *Ann Intern Med* 1993;119:302-3.
7. Taylor BJ, Duffill MB. Recurrent pseudo-scarlatina and allergy to pseudoephedrine hydrochloride. *Br J Dermatol* 1988;118: 827-9.
8. Tomb RR, Lepoittevin JP, Espinassouze JP, Heid E, Foussereau J. Systemic contact dermatitis from pseudoephedrine. *Contact Dermatitis* 1991;24:86-8.
9. Roed-Petersen J. Contact sensitivity to metaoxedrine. *Contact Dermatitis* 1976;2:237-8.

Allergy to pine nuts

PINE nuts, seeds of the tree *Pinus pinea*, are frequently used as a seasoning in the cuisine of the Mediterranean area of Spain. Not many cases of allergic reactions after ingestion of pine nuts have been reported (1-4). We describe the case of a patient previously sensitized to almond who

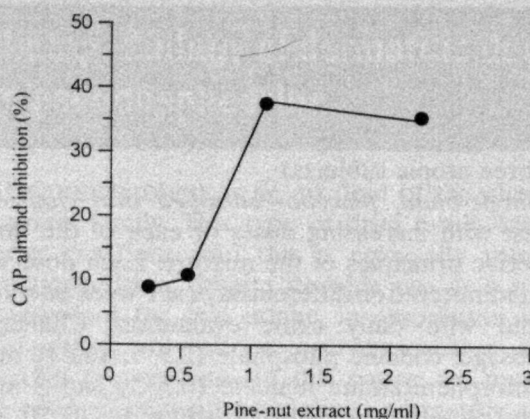


FIGURE 1 FEIA CAP inhibition of almond with pine-nut extract.

presented systemic reactions after ingestion of pine nuts incorporated in various dishes.

We also demonstrate antigenic community between pine nut and almond, although they are not botanically related (almond belongs to the rose family), by CAP inhibition and blotting inhibition. Cross-reactivity between pine nut and almond has not been previously described in the literature.

■ A 28-year-old man presented several episodes of generalized pruritus with involvement of the palms and soles; angioedema localized in the face, genitals, and oropharynx; dysphagia and difficult

breathing; erythematous maculopapular rash in the trunk and extremities; and dizziness. Each time, he needed treatment with parenteral antihistaminics and steroids. Those episodes took place on three occasions after ingestion of nuts (almonds among them), meatballs,

With serum from a patient with systemic reactions and IgE antibodies to pine nuts, cross-allergenicity to almond was demonstrated.

and meat pie, respectively. The meatballs and meat pie contained pine nuts that the patient did not notice. The patient was asymptomatic between the episodes. He tolerated the ingestion of walnut, hazelnut, and peanut, and the ingredients that he noticed in the meat pie and in the meatballs: meat, onions, pepper, tomatoes, garlic, and wheat flour.

He also reported having, since infancy, itchy, papular, and erythematous skin lesions on both forearms immediately after handling almonds.

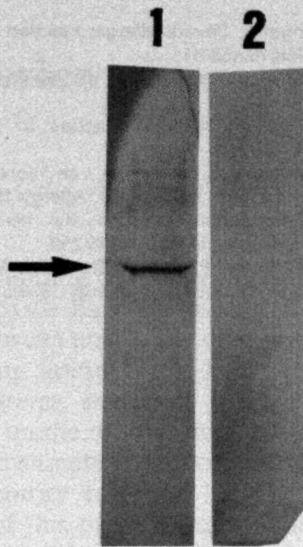


FIGURE 2 Immunoblotting inhibition. Lane 1 corresponds to pine-nut immunodetection and lane 2 to blotting inhibition of pine-nut proteic bands with almond extract.

For skin-testing, we used a hydroalcoholic extract from raw pine nuts prepared by the Frugoni method (5) with a total proteic content of 111 mg/l. Two 10-fold dilutions of the extract were prepared to be used for both prick and intradermal tests. We also tested by prick common inhalants and foods, including almond, peanut, hazelnut, and walnut. We considered positive a wheal with a diameter greater than 3 mm.

For intradermal tests, we tested the two dilutions described before in seven healthy controls. Two of them showed minimal irritative wheal and flare reaction with the 1:10 dilution; therefore, this dilution was not skin-tested in the patient.

The skin prick test was positive for *Dermatophagoides pteronyssinus*, peanut, hazelnut, walnut, and almond (wheal 7×5 mm) and for pine nut (1:100) (wheal 6×6 mm), and negative for pollens (grass, mugwort, birch, *Olea europaea*, and *Platanus acerifolia*). The patient showed positive intradermal test reaction to pine nut (1:100) (wheal 10×12 mm).

Total and allergen-specific IgE was determined with the ImmunoCAP FEIA (Pharmacia, Uppsala, Sweden). The total IgE was 485 UI/ml, and the patient had serum specific IgE against *D. pteronyssinus* (2.35 kU/l), almond (9.79 kU/l), peanut (51.6 kU/l), hazelnut (35.5 kU/l), and pine nut (5.27 kU/l).

We did not perform oral provocation with pine nut and almond because of the severity of the systemic reactions that the patient had presented after their ingestion.

For CAP inhibition, the pine-nut extract was resuspended in PBS to a final protein concentration of 2.22 mg/ml. Three ½-fold dilutions were made. A volume of 20 µl of the patient's serum was incubated with 30 µl of each dilution of the pine-nut extract and with 30 µl of PBS (inhibition 0) over 2 h at room temperature, under mild shaking. Then we determined specific IgE against almond by CAP FEIA (Pharmacia, Uppsala, Sweden): pine-nut extract inhibited at different concentrations the binding of specific IgE to almond: 2.22 mg/ml pine nut inhibited 35.34%; 1.11 mg/ml inhibited 37.44%; 0.55 mg/ml inhibited 9.17%; and 0.27 mg/ml inhibited 8.87% (Fig. 1).

SDS-PAGE analysis of pine-nut extract was performed by loading protein from pine-nut extract onto a gel of 12% polyacrilamide at 50 mA for 45 min. One part of the gel was dyed with Coomassie brilliant blue, and the rest was used to transfer the proteic bands to nitrocellulose membrane in a Bio-Rad transfer tray for 1 h at 200 V and 0.8 mA/cm.

For immunodetection, the membrane was incubated for 2 h in 1% BSA in PBS, pH 6.8. After washing, the blocked membrane was incubated for 20 h with the patient's serum. After four 10-min washes, it was incubated for 4 h with a 1/50 dilution of peroxidase-conjugated goat IgG against human IgE (Dakopatts). The bands were stained with 0.06% 4-chloro-1-naphthol in PBS, with 0.01% H₂O₂. As a control, the same experiment was performed with a pool of seven sera from seven healthy donors.

We performed immunoblotting inhibition by incubating 2 ml of the patient's serum with 50 µl of the almond extract (same extract used for CAP inhibition) for 2 h at room temperature under gentle shaking. The immunodetection was performed as described before.

The stained gel electrophoresis of pine-nut extract revealed more than 12 protein bands with molecular weights of 17–133 kDa. Several of these bands reacted to the patient's specific IgE, especially at 50 kDa. Other authors have found the most prominent proteic band between 60 and 68 kDa (6); therefore, there may be several antigenic determinants that elicit an IgE response in patients sensitized to pine nuts.

After blotting inhibition with the almond extract, all those bands disappeared (Fig. 2), demonstrating the existence of antigenic community between both nuts and confirming the findings of the CAP inhibition.

Although hypersensitivity to more than one kind of nut is frequent, there are not many publications confirming or describing cross-reactivity between different kinds.

Key words: almond; cross-reactivity; food allergy; pine nut.

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REFERENCES

1. Santos JM, Unger L. Severe allergic reaction to pignolia nut. *Ann Allergy* 1958;16:459-61.
2. Falliers CJ. Pine nut allergy in perspective. *Ann Allergy* 1989;62:186-9.
3. Nielsen NH. Systemic allergic reaction to pine nuts. *Ann Allergy* 1990;64:132-3.
4. Jansen A, Vermeulen A, Dieges PH, van Toorenenbergen AW. Allergy to pine nuts in a bird fancier. *Allergy* 1996;51:741-4.
5. Hansen K. Diagnóstico especial de las enfermedades alérgicas. In: *Tratado de alergia*. 1946:250.
6. Koepke JW, Williams PB, Osa SR, Dolen WK, Selner JC. Anaphylaxis to piñon nuts. *Ann Allergy* 1990;65:473-6.

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