

Hypersensitivity to the Antioxidant Ethoxyquin

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To the Editor:

Further to case reports published on occupational illnesses due to contact dermatitis caused by the antioxidant ethoxyquin,^{1,2} we report a patient with delayed hypersensitivity to this product who experienced a flare-up after patch testing. Ethoxyquin is used to prevent the oxidation of feed and essential oils, and in some countries to preserve the color of spices and fruit.³

The patient was a 38-year-old man with episodes of eczematous lesions, angioedema, and bronchospasm after workplace exposure to the antioxidant ethoxyquin (Capsoquin Liquid), which has the chemical formula 1,1-dihydro-6-ethoxy-2,2,4-trimethylquinoline. He worked as the chief mechanic at a company that manufactured chicken-based dog food, and had associated the onset of symptoms with product inhalation and once to contact. The symptoms manifested about 12 hours after exposure. The patient was able to tolerate consumption of chicken meat.

The blood tests, which included complete blood count, biochemistry, erythrocyte sedimentation rate, total proteins, immunoglobulins, serum complement levels, and tryptase were completely normal, except for moderate eosinophilia. Hypersensitivity to common aeroallergens and to foods was ruled out by a standard battery of skin prick tests. No specific immunoglobulin E was found against chicken serum proteins, droppings, or feathers. Skin prick tests with feed components treated with ethoxyquin (soy flour, chicken meat, and chicken feathers) were negative when read immediately and positive after 24 hours.

Patch tests with a European battery of contactants (Laboratorios Bial-

Aristegui, Bilbao, Spain) were negative. Patches were prepared in 2% and 4% petroleum jelly with each separate feed component, and reading was delayed until 48 and 72 hours, as recommended by the Grupo Español de Investigación en Dermatitis de Contacto (Spanish Contact Dermatitis Research Group).^{4,5} The test was positive for 2% and 4% ethoxyquin (++++), soy flour with 2% and 4% ethoxyquin (+++), and soy flour with 2% sodium hydroxide and ethoxyquin (++) (Figure). The reading was negative to sodium hydroxide, ethoxyquin-free soy flour, and soy flour with 4% sodium hydroxide/ethoxyquin. Flare-up was observed, with onset of eczematous lesions at some distance from the area where the patches were placed, in areas initially affected by previous adverse reactions. In 2 healthy controls with 2% and 4% ethoxyquin, the reading was negative.

The quinolines, the group to which ethoxyquin belongs, are of little relevance in Spain,⁶ although of sufficient prevalence to be included in

the European battery of contactants.⁷ In our case, no reaction was observed to these compounds and, therefore, it did not appear that ethoxyquin had any cross reactivity with other quinolines that could have acted as primary sensitizers.

We are unaware of the clinical impact that eating meat from animals fed with feeds containing this antioxidant could have among hypersensitive patients, although it could be related to the appearance of disseminated eczemas classified as idiopathic.

References

1. Van Hecke E. Contact dermatitis to ethoxyquin in animal feeds. *Contact Dermatitis*. 1977;3:341-2.
2. Alanko K, Jolanki R, Estlander T, Kanerva L. Occupational "multivitamin allergy" caused by the antioxidant ethoxyquin. *Contact Dermatitis*. 1998; 39:263-4.
3. Nardin C, Trevisani G. Schalenbräune an Äpfeln-DPA oder Ethoxyquin? *Obstbau-Weinbau*. 1986;23:202-6.
4. Fernández de Corres L, Fernández E, Muñoz D. Pruebas epicutáneas. *Rev Esp Alergol Inmunol Clin*. 1993;8:29-34.
5. Brasó JV, Jorro G. Pruebas cutáneas y otras exploraciones in vivo con alérgenos. In: Brasó JV, Jorro G, editors. *Manual de Alergia Clínica*. Barcelona: Masson, S.A.; 2003. p. 63-92.
6. García-Bravo B, Conde-Salazar L, de la Cuadra J, Fernández-Redondo V, Fernández-Vozmediano JM, Guimaraens D, et al. Estudio epidemiológico de la dermatitis alérgica de contacto en España (2001). *Actas Dermosifiliogr*. 2004;95:14-24.
7. Bruze M, Conde-Salazar L, Goosens A, Kanerva L, White IR. Thoughts on sensitizers in a standard patch test series. *Contact Dermatitis*. 1999;41:241-50.

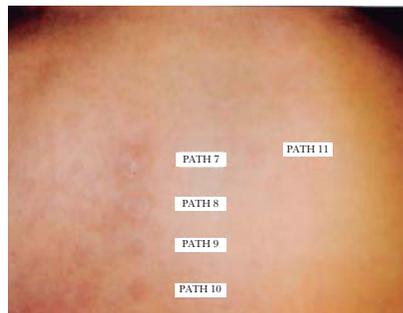


Figure. Patch test reading at 72 hours. Patch 7: 2% ethoxyquin. Patch 8: 4% ethoxyquin. Patch 9: soy flour with 2% ethoxyquin. Patch 10: soy flour with 4% ethoxyquin. Patch 11: soy flour with 2% ethoxyquin/sodium hydroxide.