

Conundrums of Patch Testing to Euxyl K 400 and Its Components

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PRECÍS

Use of Euxyl K 400 as a preservative in skin care products is banned in Europe, but continues in the United States. Positive patch testing to Euxyl K 400 may occur in the setting of negative reactions to its components, methyl dibromoglutaronitrile and phenoxyethanol.

DISCUSSION

A 25-year-old Hispanic woman had a pruritic, eczematous eruption of 7 months' duration initially on the right cheek, but spread to the contralateral cheek, upper eyelids, arms, back, and abdomen, despite treatment with terbinafine cream and pimecrolimus ointment. The rash resolved with a 2-month course of oral prednisone, but recurred upon its completion. She was patch tested to the NACDG-80 and cosmetic series (Chemotechnique) and to her personal skin care products, all of which were negative except Euxyl K 400 (1.5% in petrolatum, cosmetic panel), which was weakly positive after 4 and 7 days. She did not react to methyl dibromoglutaronitrile (MDBGN) alone (in petrolatum as 0.3%, cosmetic panel; or 0.5%, NACDG-80 panel) or to phenoxyethanol (PE) alone (2.0% in petrolatum, cosmetic panel). Her eruption cleared following avoidance of products containing Euxyl K 400, MDBGN, or PE and treatment with fluticasone cream for her face and body and pimecrolimus ointment for her eyelids.

Euxyl K 400 was introduced in consumer products in 1985 in Europe and in 1990 in the United States as a 1:4 mix of MDBGN and PE.¹ Methyl dibromoglutaronitrile was reported to be the most

common allergen; in a study of 3455 cases, 99 (2.8%) reacted to 2.5% Euxyl K 400, of which 51 were positive to 0.5% MDBGN and only 2 to 5% PE.²

Because of increasing contact allergy prevalence, Euxyl K 400 was banned in Europe from industrial and cosmetic products in 2003 and from rinse-off products in 2008. This restriction led to a significant reduction in prevalence of contact allergy to MDBGN.¹ In the United States, the maximum recommended MDBGN concentration is 0.025% in leave-on products and 0.06% in rinse-off products.¹

Methyl dibromoglutaronitrile (1,2-dibromo-2,4-dicyanobutane or Tektamer 38) is found in several mixes, including Chemynol K, Euxyl K 135/400/466/727, Isocide FG, Merguard 1105/1190/1200, and Microcare MCP.^{1,3} Noncosmetic sources include latex, paints/glues, metalworking fluids, joint cements, liquid detergents, fabric softeners, wood preservatives, color photography solutions, and paper/paperboard.³

Not all patients who react to Euxyl K 400 will test positively to MDBGN,² as was true of our patient. Possible reasons are false-positive reaction to Euxyl K 400 (unlikely given clinical improvement upon avoidance) or false-negative reaction to either MDBGN or PE. Some authors have suggested forgoing Euxyl K 400 and only patch testing to MDBGN and to PE to avoid cumulative irritancy.³ Others have reported a higher reaction index (lower numbers of questionable or irritant reactions) for Euxyl K 400 than MDBGN alone.⁴ Euxyl K 400 and MDBGN are among the leading allergens with low reaction indexes and high positivity ratios (high numbers of weak positives).⁵

PEARL

Patch testing concurrently to Euxyl K 400 and to MDBGN, if not also to PE, is ideal, because it helps to reconcile discrepant outcomes.

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