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Occupational allergic contact dermatitis caused by Euxyl K 400

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The preservative Euxyl K 400 (Schülke & Mayr GmbH, Germany) is now a well-recognized sensitizer (1–8), but occupational cases have only occasionally been reported (1, 2, 9, 10).

Patients and Methods

Between January 1989 and April 1996, 736 patients were tested with Euxyl K 400 0.5% pet. at the Finnish Institute of Occupational Health in Helsinki, all suspected of having occupational contact dermatitis. Euxyl K 400 was tested in an antimicrobials series and in an oils and cutting fluids series. Patch tests were performed as previously described (11, 12), according to ICDRG guidelines, using Finn Chambers on Scanpor (Epitest Ltd, Finland). The tests were positive in 11 patients (1.5%). Occupational allergic contact dermatitis from Euxyl K

400 was found in 2 patients; in 1 other case, the source of sensitization was non-occupational. In the rest of the cases, the source of sensitization remained unclear. All but 1 patient had other contact reactions. 4 were sensitized to common constituents of cosmetics, 3 to perfumes and 1 to chloroacetamide.

Case Reports

The results of these 2 patients' patch tests are shown in Table 1.

Case no. 1

A 43-year-old non-atopic male offset printer had had hand dermatitis for 10 years. He had washed his hands 20× a day for 3 years with Dreumex[®], a cleansing agent containing Euxyl K 400. The employer had paid for the

Table 1. Patch test results

Patient no.	Occupation	Patch test	D2	D3	D4	D5	D6	Other contact reactions
1	offset printer	Euxyl K 400 0.5% pet.	+	++	++			–
		Dreumex 10% pet. (hand cleansing agent)	?+			–		
2	hospital cleaner	Euxyl K 400 0.5% pet.	++	?+			++	nickel sulfate, Ampholyt 103G
		Prilan [®] 10% pet. (liquid detergent)	+	+			++	

cleansing agent, and the workers were expected to use the product. Before sensitization to Euxyl K 400, he had had irritant hand dermatitis simply from frequent washing. His hand dermatitis disappeared when he stopped using the cleansing agent containing Euxyl K 400.

Case no. 2

A 60-year-old non-atopic female hospital cleaner had a 1.5-year history of dermatitis on the fingers. She had washed the dishes with Prilan[®], a liquid detergent containing Euxyl K 400, several times a day without protective gloves. Her hand eczema disappeared when she stopped using the product containing Euxyl K 400.

Discussion

Euxyl K 400 consists of 1,2-dibromo-2,4-dicyanobutane (20%) and phenoxyethanol (80%). Dibromodicyanobutane is the main sensitizer. Allergy to phenoxyethanol has been reported only occasionally (2, 3, 13). Because of its supposedly low sensitizing potential (14, 15), Euxyl K 400 became widely used in cosmetics and toiletries as an alternative to isothiazolinone preservatives (7). High frequencies of sensitization have been reported in The Netherlands (4%) (8) and Italy (2.8%) (7), the main sources having been moist toilet paper (6), face creams, body lotions, shampoos and foaming soaps (3). Patch tests with the patients' own products have usually been negative, even if they contain Euxyl K 400 (7). Use tests have been positive in some patients with positive patch tests (3, 7). The sites most commonly involved have been the hands, face and perianal region (6, 7). Patients sensitive to Euxyl K 400 have had a high frequency of contact allergy to other common constituents of cosmetics (3).

Occupational contact allergy to Euxyl K 400 has briefly been mentioned as occurring in masseurs (2, 9) and a beautician (1). Euxyl K 400 is also used as an industrial preservative in water-based paints, glues and metalworking fluids (6). A case of occupational allergy to dibromodicyanobutane in a paste glue formulation was reported in 1983 (10). According to the Finnish Register of Occupational Diseases for 1990–95, 4 cases of allergic contact dermatitis out of a total of 2305 (0.2%) were reported to be caused mainly by 1,2-dibromo-2,4-dicyanobutane. As Euxyl K 400 has replaced isothiazolinones in a wide range of products (7), including detergents and hand creams, more occupational cases of contact dermatitis are to be expected. The high frequency of hand dermatitis in patients sensitive to Euxyl K 400 (7) implies that cosmetics are not the only source. It may be especially hazardous to use cleansing agents and skin care products containing Euxyl K 400 on irritated skin, in occupations in which the hands are repeatedly exposed to skin irritants resulting in dermatitis.

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