

Contact allergy to methyldibromoglutaronitrile in Euxyl® K 400 in a cosmetic cream for protection against a permanent wave solution

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Key words: allergic contact dermatitis; cosmetics; dibromodicyanobutane; Euxyl® K 400; ingredient labelling; methyldibromoglutaronitrile; phenoxyethanol; preservatives.

Euxyl® K 400 is a preservative containing two active ingredients, methyldibromoglutaronitrile (MDGN) and 2-phenoxyethanol, in a 1:4 ratio. In 1985 it was introduced to the European market as a potent alternative to other biocides with, theoretically, more sensitizing potential, for example isothiazolinones (1–3).

Allergic reactions to Euxyl K 400 are almost exclusively sensitizations to its MDGN component, which was first described in 1983 (1, 4).

It has been licensed for preservation of raw materials in cosmetic products, e.g. bath salts, creams, skin cleansers, shampoos, detergents and moist toilet tissue. This biocide is used industrially as an additive in latex paints, adhesives based on PVC, jointing cement, cooling lubricants, inks, polishes, waxes among others (3). Recently, allergic reactions to ultrasonic gels containing MDGN have been reported (5).

Case Report

A 48-year-old nonatopic woman presented with acute contact dermatitis

of the forehead 4 days after visiting a hairdresser, where a protective cream (Vitasan®,) had been applied to the forehead prior to a permanent wave. After 1 day she developed erythema and after 3 days a band-shaped, sharply limited, vesicular eczema in the contact area. Additionally, oedema of the periorbital region developed on the left side. The skin reaction was treated successfully with topical corticosteroid preparations.

Two months after the skin reaction had resolved, patch testing was performed with the standard series, fragrance series, external preparations, hairdressing substances and with the ingredients of Vitasan. The test procedure followed the guidelines of the German Contact Dermatitis Research Group.

The patient showed positive patch test reactions to Euxyl K 400 1% pet. (+++), Lyril 5% pet. (+++), Vitasan cream (+++) and one of its components, fragrance 0.25% (+), at D2 and D3. All other tests were negative.

Discussion

In the past decade, the number of allergic reactions to the MDGN component of Euxyl K 400 has increased dramatically (6). This is most likely a consequence of its increasingly wide use in industrial and skin care products.

Four years after introduction to the European market (1985) the number of sensitizations rose to 62 cases with an increasing tendency (2). In 2000, the IVDK (Information Network of Dermatologic Hospitals) has observed positive patch test reactions to Euxyl K 400 in 4.2% of patients tested ($n = 8868$) in Germany.

The case here presented shows that, in addition to allergic or irritant reactions to constituents of hair colours, shampoos or permanent wave liquids, other allergic contact factors must also be considered. In our patient, the cause of the contact dermatitis was sensitization to an in-

redient of a protective cream. Contact allergy to this was suspected because lesions were restricted to the forehead, without scalp involvement. Today, Euxyl K 400 is used so widely, sensitization rates to MDGN having risen to approximately 4%, that clinically relevant contact dermatitis occurs not only from shampoos, skin cleansers, etc., but also from less familiar products, such as ultrasonic gel, deer fat cream or, in our case, a skin protection cream (5, 7).

References

1. Armstrong D K B, Smith H R, Rycroft R J G. Contact allergy to methyldibromonitrile. presenting as severe scalp seborrhoeic eczema. *Contact Dermatitis* 1999; 40: 335.
2. Okkerse A, Geursen-Reitsma A M, van Joost T. Contact allergy to methyldibromoglutaronitrile and certain other preservatives. *Contact Dermatitis* 1996; 34: 151–152.
3. Torres V, Pinto Soares A. Contact allergy to dibromodicyanobutane in a cosmetic cream. *Contact Dermatitis* 1992; 27: 114.
4. Hausen BM, Brinkmann J, Dohn W (eds.) *Lexikon der Kontaktallergene*. Hamburg: ecomed verlagsgesellschaft, 1994.
5. Hillen U, Franckson T, Goos M. Allergic contact dermatitis due to deer-fat cream (Hirschtalgcreme). *Contact Dermatitis* 2001; 44: 58.
6. McFadden J P, Ross J S, Jones A B, Rycroft R J G, Smith H R, White I R. Increased rate of patch test reactivity to methyldibromoglutaronitrile. *Contact Dermatitis* 2000; 42: 54–55.
7. Erdmann S M, Sachs B, Merck H F. Allergic contact dermatitis due to methyldibromoglutaronitrile in Euxyl K 400 in an ultrasonic gel. *Contact Dermatitis* 2001; 44: 39–40.

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