

Allergic contact dermatitis to ethylhexylglycerin and pentylene glycol

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Preservative allergy is one of the main reasons for allergic contact dermatitis caused by cosmetic products. Preservatives allowed in cosmetic products in the EU are listed with concentration limits in annex VI to the Council Directive 76/768/EC. Preservatives are inherently reactive chemicals with varying sensitizing potential, and consumer risk of developing allergic contact dermatitis to cosmetic preservatives depends on individual factors, concomitant exposures, concentration, duration and mode of exposure. The frequency of contact allergy to the various preservatives in eczema patients varies over time due to changes in product formulations and changes in exposure patterns. Authorities, manufacturers' advisors and consumers are all influenced by scientific publications on preservative allergy. New and alternative preservatives systems emerge. Here, we describe a case of allergic contact dermatitis due to two newer cosmetic ingredients with preservative action.

Case Report

A 68-year-old non-atopic woman developed recurrent and spreading facial dermatitis. She had used DecubalTM face vital cream (Actavis, Copenhagen, Denmark) for almost 10 years and had used Decubal eye cream and TolerianeTM Riche cream (La Roche-Posay, France) in the previous 2 months. Patch tests in a community dermatology practice showed positive reactions to all three products. After referral to a hospital dermatology clinic, patch testing was repeated with

the European baseline series supplemented with corticosteroids, Compositae allergens and the patient's own topical products using TRUE[®] test panels 1, 2 and 3 supplemented with petrolatum-based allergens in Finn Chambers[®] on Scanpor[®] tape (Epitest, Tuusula, Finland). The tests were occluded for 2D and read according to the International Contact Dermatitis Research Group scoring scale on D3 and D7. Again, there were positive reactions to Decubal face vital cream (+2), Decubal eye cream (+1) and Toleriane Riche soothing protective cream (+2) and also Toleriane soothing protective skincare (+2). The patient was subsequently patch tested according to the list of ingredients with individual components in Decubal and Toleriane products obtained from the manufacturers and she reacted to ethylhexylglycerin 5% pet. (+2) present in Toleriane cream and pentylene glycol 5% and 0.5% aq. (+1) present in Decubal cream. There was no reaction to propylene glycol.

A total of 25 consecutive controls were negative to ethylhexylglycerin 5% pet. and another 29 to pentylene glycol 5% and 0.5% aq., except one follicular reaction to pentylene glycol 5%. The dermatitis cleared after elimination of exposure.

Discussion

Ethylhexylglycerin (syn. octoxyglycerin, 3(2-ethylhexyloxy)propane-1,2-diol, and CAS no. 70445-33-9) is an emollient solvent and a fixative with antimicrobial properties, and it is reported to enhance uptake of preservatives in micro-organisms. Two cases of allergic contact dermatitis to this cosmetic ingredient have been reported previously (1,2).

Pentylene glycol (1,2-dihydroxy pentane, CAS no 5343-92-0) is a skin-conditioning solvent that shares similar properties as propylene glycol (1,2-propanediol); however, it is considered to be less irritating and allergenic. Pentylene glycol also has antimicrobial effects. Few cases of allergic contact dermatitis to this allergen have been published (3–6). We did not find any reaction to propylene glycol in our patient in accordance with other authors (3–5), although cross-reactions between glycols are a theoretical possibility.

Ethylhexylglycerin and pentylene glycol are not included in the list of preservatives in Annex VI of the

Cosmetics Directive. However, they are used as preservatives and contact allergy to these compounds may be overlooked if not tested specifically in case they are present in cosmetic products causing dermatitis.

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