Re-emergence of allergic contact dermatitis from chlorphenesin

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Only a few cases of allergic contact dermatitis (ACD) from chlorphenesin have been reported and since 2015 no new cases have been published (<u>1-6</u>). We describe two additional cases of ACD from this preservative in cosmetics observed during late 2021.

Case Reports

Case 1

A 25-year-old non-atopic woman presented with an erythemato-papular eruption of the neck, abdomen, arms and thighs. As ACD was suspected, patch tests were performed with the European baseline and cosmetic series (Chemotechnique Diagnostics, Vellinge, Sweden, and AllergEAZE, SmartPractice, Phoenix, AZ), as well as with the patient's cosmetic products, using IQ Ultra chambers (Chemotechnique Diagnostics). Following an occlusion of 2 days, the tests were read on day (D)2 and D4 according to International Contact Dermatitis Research Group criteria. Only a positive reaction (++) was observed to a moisturizing cream (Xemose anti-itch soothing oil balm; Uriage, France). Subsequently, patch tests were carried out with the separate ingredients of this product, obtained by the manufacturer. Readings on D2 and D4 showed positive reactions (++/+) to chlorphenesin (0.3% aq.) (**Figure 1A**). Patch tests with this chlorphenesin preparation in 10 controls were negative.

Case 2

A 32-year-old man presented with an erythemato-papular eruption on the hands. He had noted worsening of the skin lesions following the application of a hand cream (Bariederm-CICA insulating repairing hand cream; Uriage, France). He also reported a facial eruption after using a face cream (Hydraphase HA Rich; La Roche Posay/L'Oréal, Clichy, France) (**Figure 1B**). Patch tests were performed, as in Case 1, and readings showed on D4 a positive patch test only

to the hand cream (++) (**Figure 1B**); there was no positive reaction to the face cream. A repeated open application test (ROAT, twice daily on his forearm) (7), with the face cream revealed, after 4 days, a purpuric erythemato-papular reaction (**Figure 1C**). Additional patch tests with the ingredients of both products (obtained from both manufacturers) showed a positive reaction (+) to the common ingredient chlorphenesin (0.3% aq.). The patient also tested positively to limonene hydroperoxides (+), thiuram mix (+), and *Myroxylon pereirae* resin (+), considered irrelevant for the current ACD.

Discussion

Chlorphenesin (CAS 104-29-0) is used as an antimicrobial in cosmetic products. Although cross-reactivity is possible with mephenesin, a muscle relaxant, no previous contact with this topical drug was evident in our patients, indicating that primary sensitization occurred to chlorphenesin from its presence in (dermo)cosmetic products. To date, only 10 cases of ACD from chlorphenesin have been reported, initially due to its presence in antifungal creams (1, 2), and later also in cosmetics, such as deodorants (3), moisturizing creams (4-6), foundation makeup (5) and sunscreens (8). According to most papers, chlorphenesin can be patch-tested 1% pet. or aq. with no risk of skin irritation. Unfortunately, to date, chlorphenesin is not available as a commercialized patch test preparation. We patch tested with chlorphenesin 0.3% aq., obtained from the cosmetic industry, which corresponds to the concentration in the culprit cosmetic products; it is also the maximum concentration allowed in EU cosmetics (9). Recently, a "EU Cosmetic Series" has been proposed (10), however, not mentioning chlorphenesin. Our report confirms the importance of patch testing the patients' personal products, and all their individual ingredients, in order to identify culprit allergens. A US study, in 2017, highlighted that chlorphenesin is a prevalent cosmetic preservative (11), and given its apparent re-use as a preservative in (dermo)cosmetics, more cases of ACD from chlorphenesin might be expected in the near future.

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