

Allergic contact dermatitis caused by PEG-22/dodecyl glycol copolymer in a skin-repairing cream

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Copolymers are large molecules with high molecular weight, usually >1000 Da, that have recently been

identified as potential skin sensitizers. Here, we report a case of allergic contact dermatitis caused by PEG-22/dodecyl glycol copolymer contained in a 'skin-repairing' cream.

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Case Report

A 45-year-old female patient, with a background of Graves disease, Biermer disease, and chronic spontaneous



Fig. 1. Positive repeated open application test result with Cicalfate® cream (Avène; Pierre Fabre Dermo-Cosmétique, Paris, France), applied twice daily, after 4 days.

urticaria, reported a history of acute eczema around the surgical scar of her thyroidectomy, starting 20 days post-surgery. She had no history of atopic dermatitis. She had applied Cicalfate® cream (Avène; Pierre Fabre Dermo-Cosmétique, Paris, France), twice daily for 2 days when the cutaneous lesions occurred, and had applied Calendula Officinalis Teinture Mère® (Boiron, Messimy, France) during the week before. The symptoms subsided within 2 weeks with application of topical corticosteroids. As allergic contact dermatitis was suspected, the patient was asked to perform a repeated open application test with both products on one arm each. Only Cicalfate® cream gave a positive follicular reaction after 4 days of twice-daily application (Fig. 1). Patch test were performed with the European baseline series and a cosmetics series (Chemotechnique Diagnostics, Vellinge, Sweden), and with the full ingredients supplied by the manufacturer, by the use of IQ Ultra® Chambers (Chemotechnique Diagnostics) applied on the back and covered with Mefix® (Mölnlycke Health Care, Göteborg, Sweden). Readings were performed on day (D) 2 and D4, according to ICDRG criteria. There was a ++ reaction on D4 to nickel sulfate, with past relevance, a ++ reaction on D4 to textile dye mix, with unknown relevance, and a + reaction to

cobalt chloride. Regarding the ingredients of the cream, only PEG-22/dodecyl glycol copolymer 20% pet. gave a positive reaction (++ on D4). The patch test performed with a sample of the cream supplied by the brand 'as is' gave a negative result, but yielded a positive result after 3 days of repeated application on the arm. The diagnosis of allergic contact dermatitis caused by PEG-22/dodecyl glycol copolymer was established.

Discussion

Copolymers are frequently used in cosmetics, because of their antistatic, film-forming, binding, suspending, viscosity-increasing, skin-conditioning and emulsion-stabilizing properties (1). The International Nomenclature of Cosmetic Ingredients inventory lists ~200 different copolymers, but, to date, only some of them have been reported to cause allergic contact dermatitis (1), probably because of their high molecular weights. The copolymers are probably not the haptens, and the exact nature of the latter remain unknown (1).

PEG-22/dodecyl glycol copolymer (CAS no. 78336-31-9) is used as an emulsifier (1). To our knowledge, there is no published report of allergic contact dermatitis caused by PEG-22/dodecyl glycol copolymer, nor any published case of allergic contact dermatitis caused by Cicalfate® cream, which is widely used worldwide for adult and paediatric patients. However, there are some published cases of allergic contact dermatitis caused by methoxy PEG-22/dodecyl glycol copolymer and methoxy PEG-17/dodecyl glycol copolymer, two different molecules that can cross-react (2–4). However, there seem to be no published data regarding potential cross-reactions between PEG-22/dodecyl glycol copolymer and these molecules.

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