Allergic contact cheilitis caused by polysilicone-15 (Parsol® SLX) in a lipcare balm

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We report the first two cases of allergic contact lip dermatitis caused by a lipcare stick, owing to polysilicone-15 (CAS no. 207574-74-1) (Parsol® SLX), an ultraviolet (UV)B sunscreen agent.

Case Report
A 14-year-old girl with a history of atopic dermatitis presented with acute cheilitis of 2 months’ duration. She had redness of her lips with dryness, extending around to the peri-oral skin. She had been using a lipcare stick (Dermophil®; Melisana, Magny le Désert, France) several times a day for 2 months, because of chapped lips. Patch tests were performed on her back with the European baseline series (Chemotechnique® Diagnostics Vellinge, Sweden) and her own cosmetics.
The only positive patch test reaction in both patients was to oxybenzone, which is a known allergen. However, to our knowledge, our cases are the first to show that polysilicone-15 has sensitizing properties. Nevertheless, these findings remain surprising. First, polysilicone-15 is a macromolecule that spreads and is expected to remain on the cutaneous surface. The absence of penetration through the epidermis should therefore prevent a reaction with epidermal proteins and subsequent sensitization. Nevertheless, copolymers, which are also used in cosmetics, may be responsible for allergic contact dermatitis, and it has been suggested that impurities may be the culprit allergens (5). Second, this UV filter has been used for several years in many cosmetics, and it is surprising that no previous case of allergy had been reported.

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Discussion

We report 2 cases of relevant allergic contact dermatitis caused by the sunscreen agent Parsol® SLX, and in 1 case also by bisabolol, both contained in a lipcare stick.

Cheilitis is commonly allergic, and the culprit allergens are numerous. A relevant allergen was identified in at least one-quarter of cases of eczematous cheilitis reported by the North American Contact Dermatitis Group (1) but, in 36% of these cases, the relevant patch test reactions were to items not in the baseline series and mostly among lipsticks and cosmetics, as for our 2 cases.

Allergic contact dermatitis caused by a sunscreen agent in lipsticks has been previously reported, especially with oxybenzone. However, to our knowledge, our cases are the first cases of allergic contact dermatitis caused by Parsol® SLX reported in the literature. Parsol® SLX is the trade name of polysilicone-15 in the International Nomenclature for Cosmetic Ingredients. It is a UVB filter that combines silicone technology and organic UV filter chemistry. Its structural formula (Fig. 1) shows a polymer with a backbone chain mainly composed of repeated siloxane units, to which the chromophore units are attached (2). It was first evaluated in 1999 by the European Scientific Committee on Cosmetic Products and Non-Food Products, which concluded that it was safe for use in cosmetic products as a UV light absorber at a maximum concentration of 10%. In a second assessment in 2010, the European Scientific Committee on Consumer Safety concluded that the use of polysilicone-15 at a concentration of 0.1% in pressurized hairsprays did not constitute a risk for the consumer (3), with no evidence of a potential for the production of irritation.

Polysilicone-15 is used in many cosmetics to provide protection against UVB radiation, either for ingredients, especially in hair care products, or for skin in sunscreen products or lip balms, as in our cases.

There are few reports of allergic contact dermatitis caused by bisabolol. Only 1 case of contact dermatitis caused by bisabolol in a lipstick has been previously reported (4).

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Fig. 1. General structural formula of polysilicone-15 (2). n: units with methyl function represent approximately 90%. m: chromophore units which represent 6%. o: other chromophore units which represents 1.5% (3).
References


