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[Correction added on 13 December 2024, after first online publication: Reference 11 has been added to references and cited in the text.]

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Severe allergic contact dermatitis caused by methoxypropylamino cyclohexenylidene ethoxyethylcyanoacetate

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KEYWORDS: allergic contact dermatitis, case report, MCE, methoxypropylamino cyclohexenylidene ethoxyethylcyanoacetate, sunscreen

Methoxypropylamino cyclohexenylidene ethoxyethylcyanoacetate (MCE) is a new UVA1 filter utilised in sunscreen formulations. We report a case of an allergic contact dermatitis (ACD) caused by MCE.

CASE REPORT

A 59-year-old woman with a history of atopic dermatitis presented with chronic and severe facial dermatitis persisting for 1 year. Initially, she was treated with topical corticosteroids and calcineurin inhibitors leading to partial improvement. Physical examination revealed well-demarcated infiltrated erythematous plaques on the face (Figure 1). A biopsy was performed, and histological examination showed a slight epidermal spongiosis associated with a moderate perivascular and perifollicular infiltrate composed of lymphocytes and histiocytes in the superficial dermis with many vascular ectasia. We concluded the diagnosis of mixed facial dermatitis, comprising atopic dermatitis/ACD and rosacea induced by chronic use of topical corticosteroids. Topical corticosteroids were discontinued, and treatment with topical calcineurin inhibitors was continued. A treatment with doxycycline was initiated. However, the patient continued to present flares of her dermatitis.

Patch tests were first performed with the European baseline series, preservatives, emulsifiers, corticosteroids and personal

products. Patch test materials were supplied by Chemotechnique Diagnostics Vellinge, Sweden. At the readings at 48 and 96 h, the patch tests showed positive results (++) for her sunscreen (Anthelios UVMUNE 400 SPF 50+ from LaRoche-Posay, France). Photopatch tests were also performed with the European baseline series (Chemotechnique Diagnostics Vellinge, Sweden) and the Antelios sunscreen. The results were positive for Anthelios (++)



FIGURE 1 Well-demarcated infiltrated erythematous plaques on the face.



FIGURE 2 Positive reaction (++) to MCE 1% 50 aq/50 alc at 96 h.

both before and after exposure to 5 J/cm² of UVA, with a final reading at 96 h, confirming the diagnosis of contact allergic dermatitis to the sunscreen. We completed the patch tests with different components of this product provided by LaRoche-Posay and the test was positive for MCE 1% 50 aqua (aq)/50 alcool (alc) (++) at 48 and 96 h (Figure 2). To ensure that MCE was not an irritant, we patch-tested this UV filter on 12 healthy atopic controls, and the readings at 48 and 96 h were negative. Discontinuing the sunscreen resulted in the resolution of the lesions within approximately 1 week.

DISCUSSION

The use of sunscreen with effective UVA and UVB protection is essential for preventing sun-induced skin damage and cancer.

Sunscreens efficiently filtrate UVB, UVA2 and UVA1 up to 370 nm radiations. However, it is known that UVA1 (340–400 nm) have a higher potential of penetrating and producing harmful skin damage. Until recently, there was a lack of absorption in the 370–400 nm wavelength range. MCE is a new UVA1 filter with an absorption peak at 385 nm and a coverage ranging between 360 and 400 nm.¹ In 2020, the European Commission approved the use of MCE as a UV filter, following the conclusions of the Scientific Committee on Consumer Safety (SCCS). SCCS concluded that the use of MCE as a UV filter in cosmetic products up to a maximum concentration of 3% was safe.² Flament et al. demonstrate that protection with the SPF50/MCE sunscreen significantly reduces pigmentation and ageing signs compared to the same SPF50 sunscreen.³ Oxybenzone (benzophenone-3) is the most frequently reported contact and photo-contact allergen compared with all other UV filters.⁴ To the best of our knowledge, we report the first case of MCE ACD. Given its increased use in sunscreens, we anticipate additional cases will be

documented in the future. The authors confirm that the patient provided written consent to publish her photographs.

AUTHOR CONTRIBUTIONS

Audrey Loretan: Writing – original draft; conceptualization; writing – review and editing. **Federica Bertone:** Investigation; conceptualization. **Sebastien Menzinger:** Writing – review and editing. **Pierre Piletta:** Writing – review and editing; supervision; investigation. **Yassaman Alipour Tehrany:** Writing – original draft; conceptualization; investigation; writing – review and editing; supervision.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

Data sharing not applicable.

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