

Allergic contact dermatitis from oleoyl tyrosine in a sunscreenAntoine Badaoui¹, Mylène Vergez², Angèle Soria³

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We report the first case of allergic contact dermatitis caused by oleoyl tyrosine (CAS no. 147732-57-8), an amino acid alkyl amide, contained in a sunscreen.

Case report

A 13-year-old girl with no past medical history reported an erythematous and squamous eruption of the thighs, legs, and forearms, with itchy sensations, 6 hours following the application of the sunscreen Photoderm Bronz dry oil SPF50+ (Bioderma, NAOS, Lyon, France). The lesions secondarily spread to the face even though the sunscreen had not been applied on it (**Figure 1**). Patch tests were performed with the European baseline and cosmetic series (Chemotechnique Diagnostics, Vellinge, Sweden), and with the sunscreen “as is”. Patch test chambers used were IQ Ultra (Chemotechnique Diagnostics, Vellinge, Sweden), fixed with Hypafix (BSN medical, Stockholm, Sweden) and occluded for 48 hours. Readings, performed on day (D) 2 and D4, according to ICDRG criteria (1), only showed a strong positive reaction (++) to Photoderm Bronz dry oil SPF50+ on D4. The ingredients of this sunscreen, provided by the manufacturer, were subsequently patch tested and showed an equally strong positive reaction (++) only to oleoyl tyrosine 1% in pet. on D4 (**Figure 2**). Patch tests with this ingredient in 3 control subjects were negative.

Discussion

Oleoyl tyrosine (CAS no. 147732-57-8 **Figure 3**) is an amide formed from the reaction of oleoyl chloride and tyrosine and is used as a skin conditioning and a self-tanning agent (2). Only very few studies have evaluated the safe maximum concentration of oleoyl tyrosine as used in cosmetics, but, according to the Cosmetic Ingredient Review (CIR) panel, tyrosines did not produce any adverse cutaneous effects (irritation nor sensitization) in rats, guinea pigs or mouse skin models at concentrations up to 1% (3). Mangodt et. al (4), in 2019, reported an allergic contact dermatitis caused by capryloyl glycine, another amino acid alkyl amide,

contained in a body lotion and also in a sunscreen. The latter is a polyfunctional ingredient: it is a skin and hair conditioning agent, but also a surfactant, and has antimicrobial properties. To our knowledge, we report the first case report of documented allergic contact dermatitis from oleoyl tyrosine. Amino acid alkyl amides might be a new class of sensitizing ingredients in cosmetics, especially in sunscreens.

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Figure legends

Figure 1. Facial dermatitis following the application of Photoderm Bronz dry oil SPF50+.

Figure 2. Result of patch tests with Photoderm Bronz dry oil SPF50+ and oleoyl tyrosine 1% in pet.

Figure 3. Chemical structure of oleoyl tyrosine.



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