

Occupational contact allergy to sodium cocoamphopropionate in a skin protection cream

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Sodium cocoamphopropionate is an amphoteric surfactant used in cosmetic cleansing products for sensitive skin because it is assumed to be non-sensitizing and non-irritating. To our knowledge, we report the first cases of occupational contact dermatitis caused by sodium cocoamphopropionate in a skin protection cream.

Cases

Case 1

A 58-year-old male car mechanic developed work-related eczema of the hands and forearms of 6 months duration; he had no history of atopic diseases.

Case 2

A 35-year-old man suffered from chronic hand eczema for 7 years, with worsening in recent months. He suffered from allergic rhinoconjunctivitis, and worked as a system operator in metal processing.

Case 3

A 60-year-old male tool mechanic without atopic disposition developed hyperkeratotic, fissured hand eczema during the last year.

Table 1. Patient cases and patch test results

Patient no., patient age (years), year of examination	Patch test results on D3/D4	
	Skin protection cream* (‘as is’)	Sodium cocoamphopropionate (1% aq.)
1, 58, 2012	++	++
2, 35, 2013	+	++
3, 60, 2016	+	+
4, 55, 2017	++	+

*Cases 1–3, Stokoderm 4[®]; case 4, Stokoderm 4in1[®].

Case 4

A 55-year-old male grinder without atopic diathesis presented with hand and forearm eczema that had been present for the last 6 months.

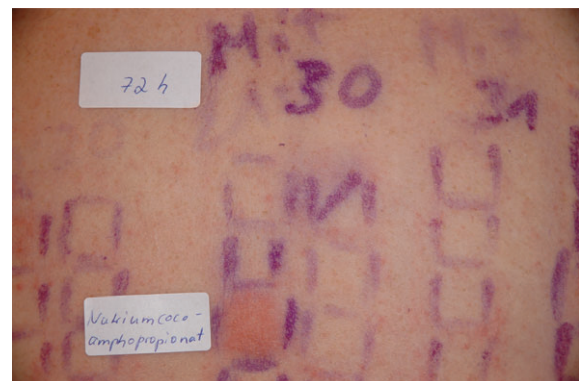


Fig. 1. Positive patch test reaction to sodium cocoamphopropionate 1% aq. on day 3 in patient 1.

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Fig. 2. Skin protection: Stokoderm 4in1 cream®: offered as 'Universal skin protection cream with cleaning agent' (German: 'Universal-Hautschutzcreme mit Schmutzlöser').

Patch test results

All patients had applied the same skin protection cream, Stokoderm 4® (synonyms: Stokoderm 4in1®, Stokoderm advanced®, Deb-STOKO Europe, Krefeld, Germany), at the workplace several times a day for > 1 year. We patch tested with the cream 'as is' and all of its single components, including sodium cocoamphopropionate, with Finn Chambers® on Scanpor® tape (SmartPractice, Barsbüttel, Germany), using 24 h of occlusion. Readings were performed on day (D) 1, D2, D3, and D4. As shown in Table 1, sodium cocoamphopropionate, tested 1% aq., was the relevant single allergen in the 4 patients (Fig. 1). No further positive reactions to the other ingredients were observed. In all patients, eczema improved after avoidance of exposure to sodium cocoamphopropionate.

Discussion

Sodium cocoamphopropionate (CAS nos. 132647-08-6 and 93820-52-1) is an imidazoline-derived amphoteric surfactant (1, 2). These substances are widely used as surfactants and as foaming and cleansing agents, mainly in cosmetic products, because of their good toxicological characteristics and their mild irritation potential, for example in comparison with anionic surfactants (1–3). Seven cases of occupational contact allergy to sodium cocoamphopropionate in a disinfecting hand cleanser (Sensisept H34®) in Finnish and Swedish workers have been published (4, 5). Only a few cases of occupational contact allergy to other imidazoline-derived amphoteric surfactants have been reported (2, 5). In our cases, sodium cocoamphopropionate was used as a component of a skin protection cream 'for oily and wet work' for the purpose of enabling removal of most of the soiling by simply using clean water or a mild hand cleanser, thanks to its function as a 'special soil-suspending emulsifier' (6). To our knowledge, we describe the first observation of allergic reactions to a cleaning agent in skin protection creams. Regarding the clinically observed allergenic potential, sodium cocoamphopropionate, a known contact allergen that has previously caused contact dermatitis when used in rinse-off products, has now been used as a component in a leave-on product intended for occupational use (Fig. 2). This, in turn, has resulted in several cases of occupational allergic contact dermatitis in users of this product, as shown in this article.

Acknowledgement

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Conflicts of interest

The authors declare no conflict of interests.

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