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An outbreak of contact allergy to cocamide diethanolamide?

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Cocamide diethanolamide (cocamide DEA), also known as coconut DEA, is frequently used in cleansers, hair shampoos, hand gels, hand-washing liquids and other washing liquids for its foam-producing and stabilizing properties (1). Contact allergy to cocamide DEA is rare, and only a few cases of non-occupational dermatitis resulting from contact with cocamide DEA have been published (2–6). We report 6 new cases of allergic dermatitis resulting from contact with cocamide DEA in an antifungal cream with ciclopiroxolamine (Mycoster[®] cream; Pierre Fabre Dermatologie, Boulogne, France), and a foaming antiseptic solution containing hexamidine, chlorhexidine, and chlorocresol (Cyteal[®] solution; Pierre Fabre Dermatologie).

Patients and Methods

This retrospective study included all patients who presented with contact dermatitis caused by Mycoster[®] cream and/or Cyteal[®] solution use between June 2012 and March 2014 in three departments of dermatology and allergology: Tenon Hospital, Paris; Besançon Hospital; and Saint-Eloi Hospital, Montpellier, France. All cases were tested with at least the European baseline series of patch test allergens, and readings were performed at D2 and D4, according to ICDRG criteria (7). Topical products were also tested with patch tests, semi-open tests, or repeated open application tests.

Six non-atopic patients presented with contact dermatitis caused by Mycoster[®] cream (5/6) and/or Cyteal[®] solution (3/6), with positive patch test reactions to cocamide DEA 0.5% pet. (CAS no. 68603-42-9; Chemotechnique Diagnostics, Laboratoire Destaing, Grasse, France) in all cases. Among these patients, 2 were male and 4 were female, and age was between 29 and 72 years (mean age 51.6 years). Clinical presentation and skin test results are summarized in Table 1.

Discussion

We report 6 new cases of non-occupational allergic dermatitis caused by contact with cocamide DEA after application of Mycoster[®] cream and/or Cyteal[®] solution. Contact dermatitis caused by cocamide DEA has been considered to be rare, and only a few cases have been reported in the literature, mainly due to the use of shampoos or hand-washing liquids. In addition, unlike cosmetic products, the ingredients of which must be listed according to the INCI, drug excipients do not have an internationally standardized nomenclature. For example, cocamide DEA has several synonyms, such as diethanolamide of coprah fatty acid (as stated for Mycoster[®] cream), dihydroxyethylalcanamide (for Cyteal[®] solution), and coprah oil. Additionally, cocamide DEA, may have several CAS numbers, according to its purity or the length of the carbon chain (C8–C18 in cocamide DEA): CAS no. 68603-42-9 as patch tested (Chemotechnique Diagnostics), and CAS no. 45233-61-2 or CAS no. 68155-06-6 in Mycoster[®] cream; Cyteal[®] corresponds to CAS no. 268-934-3. The positivity of both open tests with Cyteal[®] and Mycoster[®] and a patch test with cocamide DEA (CAS no. 68603-42-9) shows allergy to cocamide DEA-type derivatives in general. Thus, identifying the excipients in

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Table 1. Clinical presentations and results of skin tests for allergic dermatitis caused by cocamide diethanolamide (cocamide DEA)

Cases	Sex/age	Products used and indications	Presentation	Investigations
1	F/54	Contact dermatitis caused by Cyteal® solution used for dialysis catheter disinfection	Itchy and vesicular eruption around a dialysis catheter	Patch tests: EBS – (D2, D4) Cocamide DEA ++ (D2, D4) Semi-open test Cyteal® + (D4) Chlorhexidine gluconate – (D2, D4) Tegaderm® plaster – (D2, D4) (Laboratoire 3M santé, Cergy Pontoise, France)
2	F/43	Contact dermatitis caused by Mycoster® cream used for erythrasma and use of the shampoo Coco Miss Antille (Labomai, Saint Soupplets, France) containing coconut extracts (not tested)	Itchy eruption located on the neck, back, and axillary regions	Patch tests: EBS: <i>Myroxylon pereirae</i> ++ (D2, D4) Benzyl alcohol ++ (D2, D4) Cocamide DEA +++ (D2, D4)
3	M/72	Contact dermatitis of the leg caused by Mycoster® cream and Cyteal® solution	Contact dermatitis of the leg	Patch tests: EBS – (D2, D4) Cocamide DEA ++ (D2, D4) Mycoster® cream +++ (D2, D4) Semi-open test: Cyteal® ++
4	F/29	Facial dermatitis treated with Mycoster® cream, Tolexine® (Laboratoire Bailleul, 75017 Paris, France), and Rozex® cream (Galderma International, La Défense, France)	24 hrs after the beginning of the treatment, eczematous rash on the face	Patch tests: EBS – (D2, D4) Cocamide DEA ++ (D2, D4) ROAT: Mycoster® cream ++ (D4) Rozex® cream – Prick test: Tolexine® (doxycycline) –
5	F/48	Contact dermatitis caused by Mycoster® cream used for seborrheic dermatitis and by Cyteal® solution used for navel piercing disinfection	Contact dermatitis on the area of application a few days after application	Patch tests: EBS: nickel ++, cobalt ++ (D2, D4) Cocamidopropyl betaine ++ (D2, D4) Cocamide DEA ++ (D2, D4) Semi-open test: Cyteal® +
6	M/64	Contact dermatitis caused by Mycoster® cream used for tinea pedis	Contact dermatitis starting on the face and then spreading to the forearms, arms, groins, and the rest of the body	Patch tests: EBS – (D2, D3) Semi-open test with ingredients of Mycoster® cream: Cocamide DEA + (D3)

EBS, European baseline series; F, female; M, male; ROAT, repeated open application test.

the composition of drugs is difficult, and emphasizes the need for standardization of non-active ingredients.

Recently, a series of 25 patients presenting with allergic dermatitis caused by contact with cocamide DEA was published (8); 19 of the cases were occupational, mainly resulting from the use of hand cleansers; other sources were dishwashing liquids, barrier cream, and metalworking fluid. These recent cases, along with the 6 that we report here, raise the question of an increase in the frequency of allergic dermatitis caused by contact with cocamide DEA, because Mycoster® cream and Cyteal® solution have been widely prescribed in France for many years. A recent study showed that atopic dermatitis was not associated with an increased risk of allergic dermatitis caused by contact with cocamide DEA, despite abnormalities in the skin barrier function of these patients (9). In our

study, no patient had atopic dermatitis. Only 2 were also sensitized to allergens other than cocamide DEA: *Myroxylon pereirae* and benzyl alcohol in patient 2, and nickel, cobalt and cocamidopropyl betaine in patient 5.

We contacted Pierre Fabre Dermatologie, who confirmed no change in the composition or concentration of cocamide DEA in either Mycoster® cream or Cyteal® solution. There had also been no change in the suppliers of cocamide DEA.

Cocamide DEA is contained in at least eight topical drugs, according to the French Thériaque database (drug database created by French hospital pharmacists): anti-lice shampoo (Itax® shampoo, Para Special Poux® Shampoo, Item® shampoo, and Parasidose®), topical anti-fungals (Mycoster® cream, Mycoskin® cream, Ketoderm® gel and the generic versions of these drugs),

and antiseptic solution (Cyteal® solution and Septivon®). Because of the lack of standardized nomenclature for drug excipients, we cannot provide a complete list of drugs for patients to avoid.

Mycoster® cream and Cyteal® solution are widely prescribed by dermatologists and general practitioners in France. Dermatologists and allergists should be aware of the possibility of allergic dermatitis caused by contact

with these topical drugs related to contact with cocamide DEA, because such contact may lead to severe contact allergic reactions.

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