

¹Occupational Dermatology Research and Education Centre, Skin and Cancer Foundation, Melbourne, Victoria, VIC 3053, Australia, and ²Skin and Cancer Foundation, Skin and Cancer Foundation Melbourne, Victoria, VIC 3053, Australia

Dexpanthenol is the alcohol corresponding to pantothenic acid (the water-soluble vitamin B₅). Although it is a common ingredient in many pharmaceuticals and cosmetics, contact allergy is relatively uncommon. Cocamidopropyl PG dimonium chloride phosphate is a phospholipid complex derived from pure coconut oil, and contact allergy is rare. We report a case of allergic contact dermatitis to panthenol and cocamidopropyl PG dimonium chloride phosphate in a facial hydrating lotion.

Key words: coconut oil; cosmetic; dexpanthenol; site specificity; vitamin B₅.

Case report

A 55-year-old woman presented with three episodes of severe erythema and swelling of the face, eyelids, and neck. Each episode lasted approximately four days and responded rapidly to short courses of oral corticosteroids. The causative agent was unclear, although the patient had attributed the reactions to the use of various perfumes. Apart from a history of hay fever, she was otherwise well and taking no medications.

Patch tests to a modified European standard series, supplementary, cosmetic, and hairdressing series, were all negative. Patch testing to the patient's own cosmetics revealed a weak (few papules) 1+ reaction to Aveda[®] Botanical Kinetics hydrating lotion, present on day 2 (D2) and D4. The manufacturer was contacted, and individual ingredients at appropriate dilutions were obtained for further patch testing. The patient developed a 2+ reaction to cocamidopropyl PG dimonium chloride phosphate 2.5% aqueous and a 1+ reaction to dexpanthenol 0.5% aqueous (both D4). Repeat testing to the Aveda[®] Botanical Kinetics hydrating lotion, sited on the arm, gave a stronger 1+ reaction (significantly more papules but no vesicles) on both D2 and D4.

Allergic contact dermatitis to panthenol and cocamidopropyl PG dimonium chloride phosphate in a facial hydrating lotion

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Hugh Roberts¹, Jason Williams¹ and Bruce Tate²

Discussion

Dexpanthenol (International Nomenclature of Cosmetic Ingredients

(INCI name panthenol) is the alcohol corresponding to pantothenic acid (the water-soluble vitamin B₅). It is a common ingredient in many pharmaceuticals and cosmetics. Topical dexpantenol acts as a moisturizer and maintains skin softness and elasticity (1). It reduces transepidermal water loss, improves hydration of the stratum corneum, and stabilizes the epidermal barrier function (2). Dexpantenol has also been shown to accelerate skin re-epithelialization and activation of fibroblast proliferation and is used for the treatment of minor skin disorders including sunburn and burns (2). It is a frequent component of shampoos and hair conditioners as it coats and seals the hair surface, making hair appear more shiny. Although dexpantenol is widely used, contact allergy is relatively uncommon (3–4). One study has shown positive reactions in 0.34% of patients tested (5/1474), with relevance found in four of these five cases (5). It is also a cause of contact urticaria (6).

Cocamidopropyl PG dimonium chloride phosphate is a phospholipid complex derived from pure coconut oil. It has skin conditioning properties, broad-spectrum antimicrobial activity, and minimal irritant properties (7). Contact allergy is rare, and to the best of our knowledge, there has been only 1 other reported case (7). However, in this paper, the authors were aware of other unreported cases (7).

We are not aware of contact allergy to dexpantenol and cocamidopropyl PG dimonium chloride phosphate being reported in combination. This case highlights the importance of obtaining individual ingredients from the product manufacturer, particularly in cosmetics with multiple common ingredients. It also points to the potentially difficult issue of site specificity of patch testing when initial reactions are weak.

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Address:

Dr Jason Williams

PO Box 132

Carlton South

Vic 3053

Australia

e-mail: jwilliams@occdern.asn.au