

Short Communication

Allergic contact dermatitis due to panthenol

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Case Report

A 26-year-old woman was undergoing 2× weekly systemic PUVA therapy for alopecia universalis, when it was complicated by an itchy facial eczema. As well as using a sunblock to protect her face during phototherapy sessions, she was also using a moisturizing body lotion from a 'natural' skin care range. She gave a personal and family history of atopy and an additional personal history of nickel sensitivity.

She was patch and photopatch tested to our standard series, facial and medicament series, and in addition, her moisturizing lotion and skin cleanser. By the D4 readings, she had positive reactions to nickel, benzophenone and her own moisturizing lotion. There were no additional reactions on the photopatch tests. She was further patch tested to 18 ingredients of the moisturizing lotion, and gave a positive reaction to panthenol (D-panthenol 5% pet.) confirmed by repeat testing 10 weeks later. Panthenol was in the lotion at 0.5% w/w. 20 controls were negative to panthenol.

Discussion

Pantothenic acid (from Greek *pantos*=everywhere) (Fig. 1) was discovered by Williams et al. (1) and is a water-soluble vitamin, subsequently called vitamin B₅. Pantothenic acid cannot be synthesized by animals but is found in virtually all plant and animal materials, which is probably why its spontaneous deficiency in humans has not been reported (2). Pantothenic acid is an essential vitamin required for the biosynthesis of coenzyme A (CoA) in mammalian cells. Panthenol (=INCI name, pantothenol=synonym, dexpanthenol=technical name, D-Panthenol=trade name), the alcohol corresponding to pantothenic acid, is rapidly converted to D-pantothenic acid in the body. Panthenol and pantothenates have very low toxicity, and doses as high as 10–12 g daily have been administered with only occasional diarrhoea and water retention.

Panthenol is widely used in the pharmaceutical and cosmetic industries for its moisturizing, soothing and sedative properties. It is also found in topical treatments for rhinitis, conjunctivitis, sunburn and for wound healing (ulcers, burns, bed sores, and excoriations) (3). Con-

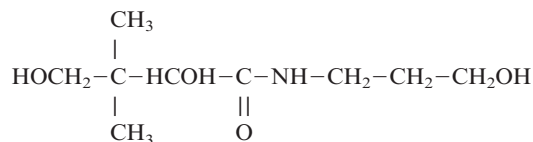


Fig. 1. Structural formula of panthenol.

tact sensitization to panthenol present in cosmetics, sunscreens and hair lotion has been reported (4–9). However, contact allergy to panthenol amongst patients attending for patch testing is uncommon. Schmidt-Grendelmeier et al. (8) found 2 positive reactions to panthenol among 273 patients patch tested (0.73%). Hemmer et al. (9) added panthenol 5% pet. to their standard series in 1474 patients and observed 5 positive reactions (0.34%), 4 of which they considered relevant.

Hahn et al. (10) performed lymphocyte transformation studies in an allergic patient and observed an increase in lymphocyte proliferation to panthenol after pre-incubation with panthenol-modified microsomes in comparison to panthenol without microsomes. It was suggested that the reaction observed was a specific T-cell-dependent reaction enhanced by microsomal-dependent metabolism of the antigen. Hemmer et al. (9) described a 33-year-old woman who presented with chronic dermatitis of the face and discoid-eczema-like lesions on the body and arms. Patch testing confirmed allergy to panthenol in a baby cream. Avoidance of the cream resulted in clinical improvement, but of interest was that 2 separate oral challenges with Ca-D-pantothenate produced exacerbation of her eczema.

The popularity of vitamin-containing 'natural' products suggests a likely increase in prevalence of contact allergy to such 'natural' ingredients, and emphasizes the importance of looking for contact allergy to them.

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