

Independent sensitization to polidocanol and trometamol or glycerol within same product

Contact Dermatitis 2007; 56: 179

David Fairhurst and Mark Wilkinson

Key words: allergic contact dermatitis; glycerol; polidocanol; trometamol.

Case Report

A 70-year-old lady with a long history of atopic dermatitis presented with an acute deterioration of her skin condition. She had hand eczema for many years, but recently developed a more widespread pattern of dermatitis that began on the face. After resolution of the acute episode, she was patch tested to the European standard series, medicament, plant and textile series together with her own samples. She was found to have positive reactions to sesquiterpene lactone mix, parthenolide, diallyldisulphide, cobalt chloride and E45 (Crookes Healthcare Limited, Nottingham, UK) Itch relief cream. 30 controls were subsequently patch tested to E45 Itch relief cream with no positive reactions.

The patient had further patch testing to the individual constituents of E45 Itch relief cream and the original product. The results are shown in Table 1. The patient declined further patch testing to constituents of the water phase.

Discussion

Polidocanol is an emulsifier and surfactant found in cosmetics such as bubble baths, shampoos and cleansing products (1). It has antipruritic and local anaesthetic properties. It is also used as a sclerosing agent in varicose vein surgery. Polidocanol is known to be a very rare sensitizer. This has been

reported in the setting of both chronic dermatitis (1) and when used as a sclerosant (2).

Trometamol is also known as 2-amino-2-(hydroxymethyl)1,3-propanediol ($C_4H_{11}NO_3$), Tris-buffer or Tris-hydroxymethyl-aminomethane. It is a biologically inert amino alcohol of low toxicity, which buffers carbon dioxide and acids *in vitro* and *in vivo* (3). It is found in a wide variety of agents, including cosmetics, as a buffer solution industrially and within medicine as an intracellular and extracellular alkalizing agent (4). Despite its wide use, trometamol is also an extremely rare sensitizer with, to our knowledge, only one previous documented report. This was in the context of a periorbital dermatitis for which an ophthalmic gel containing trometamol had been used (5).

Glycerol (glycerin) is a humectant found in cosmetic preparations. It is a very rare cause of allergic contact dermatitis with only one report in the past 30 years (6). Glycerol is considered to be a rare sensitizer and has largely been replaced in cosmetic products by propylene glycol, which is known to have a greater solubility and is less expensive (7).

We report a patient sensitized to polidocanol and also to either trometamol or glycerol. Each of these 3 substances is rarely identified as contact allergens. These agents have different molecular structures and cross-reactions between polidocanol and trometamol or polidocanol and glycerol are not known. We report independent sensitization to two constituents of the same product. Each of these is infrequent sensitizer, but we highlight their potential to cause allergic contact dermatitis on rare occasions.

References

1. Gallo R, Basso M, Voltolini S et al. Allergic contact dermatitis from laureth-9 and polyquaternium-7 in a skin-care product. *Contact Dermatitis* 2001; 45: 356–357.
2. Fried C F, Jackson J J, Bren T S et al. Allergic reactions to polidocanol for vein sclerosis. Two case reports. *J Dermatol Surg Oncol* 1994; 20: 466–468.
3. Nahas G G, Sutin K M, Fermon C et al. Guidelines for the treatment of acidemia with THAM. *Drugs* 1998; 55: 191–224.
4. Bohn S, Hurni M, Bircher A J. Contact allergy to trometamol. *Contact Dermatitis* 2003; 48: 283–284.
5. Bohn S, Hurni M, Bircher A J. Contact allergy to trometamol. *Contact Dermatitis* 2001; 44: 319.
6. Preston P W, Finch T M. Allergic contact dermatitis from glycerin in a moisturizing cream. *Contact Dermatitis* 2003; 49: 221–222.
7. Fisher A A. Reactions to popular cosmetic humectants. Part III. Glycerin, propylene glycol and butylene glycol. *Cutis* 1980; 26: 243–269.

Address:

Dr D. Fairhurst
The General Infirmary at Leeds
Great George Street
Leeds
LS1 3EX
UK
e-mail: dafairhurst@doctors.org.uk

Table 1. Results of patch testing to the constituents of E45 itch relief cream

Patch test substance	Reaction at D2	Reaction at D4
E45 itch relief cream	+	+
Polidocanol 3% in pet.	+	+-
Water phase: 85% glycerol with trometamol and benzoyl peroxide	+-	+
Benzoyl peroxide	-	-