

- CONTRIBUTIONS TO THIS SECTION MAY NOT UNDERGO PEER REVIEW, BUT WILL BE REVIEWED BY THE EDITOR •

Allergic contact dermatitis caused by ethylhexylglycerin in both an ointment and a skin aerosol

Carlotta Harries¹, Stefan Mühlenbein¹, Johannes Geier² and Wolfgang Pfützner¹

¹Department of Dermatology and Allergology, Philipps University, D-35043 Marburg, Germany and ²Information Network of Departments of Dermatology, Georg-August University, D-37099 Göttingen, Germany

doi:10.1111/cod.12471

Key words: CAS no. 70445-33-9; ethylhexylglycerin; allergic contact dermatitis; cosmetics.

Ethylhexylglycerin is used in various skin care products for its antimicrobial properties. So far, only a few case reports on contact allergy to ethylhexylglycerin have been published (1–5).

Case Report

A 50-year-old woman developed a pruritic rash on her hands and forearms, spreading to the trunk while sparing the upper arms, after applying an ointment (Totes Meer Pflegebalsam®) and a skin aerosol (Panthenol Spray®) to treat irritant hand eczema caused by intensive gardening. Patch tests with the original products and several test series of the German Contact Dermatitis Research Group (baseline series, ointment bases, preservatives, and fragrances) from Almirall Hermal (Reinbek, Germany) were applied for 48 h, and read at day (D)2 and D3. Positive reactions at D3 to triclosan 2% pet. (+), citronellol 1% pet. (+), and both suspected products tested 'as is' (++) were observed. Whereas the producer of Totes Meer Pflegebalsam® refused to provide the single components for further work-up, TUNAP (Wolfratshausen, Germany) provided the ingredients of Panthenol Spray®. Subsequent patch tests showed a positive result (++) at D2 for ethylhexylglycerin 5% pet., which was contained in both products (Table 1). Triclosan, which is frequently used in topically applied antibacterial and antifungal preparations, has been reported to be a contact allergen, albeit a rare one (6). However, our patient did

Table 1. Ingredients of original products

Totes Meer Pflegebalsam®	Panthenol Spray®
Aqua	Cetyl alcohol
Ethylhexyl stearate	Panthenol*
Oleyl erucate	Lactic acid*
Cetearyl alcohol*	Ethylhexylglycerin*
Isopropyl palmitate	Cetearyl alcohol*
Glycerin	Cetearyl glycoside
Maris sal	Hydroxyethyl urea
Panthenol*	Phenoxyethanol*
Tocopherol	Hexyldecanol
<i>Tritium vulgare</i> (wheat) germ oil	Hexyldecyl laurate
<i>Lavandula angustifolia</i> (lavender) oil	
<i>Pelargonium graveolens</i> flower oil	
<i>Pinus mugo</i> oil	
Hydrogenated palm glycerides citrate	
<i>Glycine soja</i> (soybean) oil	
Betaine	
Urea	
Polyglyceryl 3-stereate	
Phenoxyethanol*	
Dimethicone	
Sodium cetearyl sulfate	
Xanthan gum	
Allantoin	
Benzyl alcohol	
Ethylhexylglycerin*	
Tetrasodium EDTA	
Lactic acid*	
Linalool	
<i>Citrus aurantium dulcis</i> (peel) oil	
Ubiquinone	
Citronellol	
Geraniol	
Limonene	
β -Carotene	
<i>Daucus carota sativa</i> (carrot) root extract	

*Common constituents.

Correspondence: Wolfgang Pfützner, Department of Dermatology and Allergology, Philipps University, UKGM GmbH Marburg, Baldinger Str., 35096 Marburg, Germany. Tel: +49 6421 5866280; Fax: +49 6421 5862902. E-mail: wpfuetzn@med.uni-marburg.de

Funding: The submitted work was not supported by any funding.

Conflicts of interest: The authors declare that there are no conflicts of interest.

not remember any corresponding exposure or adverse reaction to a triclosan-containing product. Thus, contact allergy to ethylhexylglycerin and citronellol (present only in the ointment) could be identified as the cause of our patient's dermatitis.

Discussion

Ethylhexylglycerin (CAS 70445-33-9) is an alkyl glyceryl ether with mild antimicrobial properties used in skin care products, where it also serves as a skin conditioner (7, 8). The first case of contact allergy to ethylhexylglycerin was reported in 2002 (1). Since then, another 5 cases have been reported (2–5). In all of the latter cases, patch testing was performed with ethylhexylglycerin 5% pet. Andersen reported in 2012 that 785 consecutive patients had been patch tested with ethylhexylglycerin 5% pet. at the Odense University department of dermatology. Of these, 1 had a clinically relevant positive reaction (++).

In addition, there were six doubtful (non-relevant) reactions, but no irritant reactions (8). Thus, 5% pet. can be regarded as an appropriate patch test concentration for ethylhexylglycerin. So far, no patch test preparation with ethylhexylglycerin 5% pet. is commercially available, hence sensitization to this cosmetic ingredient may be underdiagnosed. Probably, more data will be available soon, because the North American Contact Dermatitis Group has added ethylhexylglycerin 5% pet. to its baseline series (5). For the time being, we can only agree with Andersen's statement that ethylhexylglycerin 5% pet. is a useful addition to a cosmetic ingredient series (8).

Acknowledgements

We thank TUNAP Industrie Chemie (Wolfratshausen, Germany) for providing product information and ingredients for patch testing.

References

- 1 Linsen G, Goossens A. Allergic contact dermatitis from ethylhexylglycerin. *Contact Dermatitis* 2002; **47**: 169.
- 2 Stausbøl-Grøn B, Andersen K E. Allergic contact dermatitis to ethylhexylglycerin in a cream. *Contact Dermatitis* 2007; **57**: 193–194.
- 3 Mortz C-G, Otkjaer A, Andersen K E. Allergic contact dermatitis to ethylhexylglycerin and pentylene glycol. *Contact Dermatitis* 2009; **61**: 180.
- 4 Dorschner R A, Shaw D W. Allergic contact dermatitis from ethylhexylglycerin. *Dermatitis* 2012; **23**: 134.
- 5 Sasseville D, Stanciu M. Allergic contact dermatitis from ethylhexylglycerin in sunscreens. *Dermatitis* 2014; **25**: 42–43.
- 6 Buhl T, Fuchs T, Geier J. Contact hypersensitivity to triclosan. *Ann Allergy Asthma Immunol* 2014; **113**: 119–120.
- 7 Gaonkar T A, Geraldo I, Shintre M, Modak S M. In vivo efficacy of an alcohol-based surgical hand disinfectant containing a synergistic combination of ethylhexylglycerin and preservatives. *J Hosp Infect* 2006; **63**: 412–417.
- 8 Andersen K E. Ethylhexylglycerin – a contact allergen in cosmetic products. *Dermatitis* 2012; **23**: 291.