

Allergic contact dermatitis caused by polyhexamethylene biguanide may contribute to work-related hand eczema

Michaela Kolodziej¹, Alexander Kiewert¹, Christoph Skudlik^{1,2}, Richard Brans^{1,2}

¹ Institute for Interdisciplinary Dermatologic Prevention and Rehabilitation (iDerm) at the University of Osnabrück, Osnabrück, Germany

² Department of Dermatology, Environmental Medicine and Health Theory, University of Osnabrück, Osnabrück, Germany

Corresponding author:

Dr. Richard Brans, MD

Dept. of Dermatology, Environmental Medicine and Health Theory

University of Osnabrück

Am Finkenhügel 7a, D-49076 Osnabrück, Germany.

Tel. No. +49-541-969-2357, Fax No. +49-541-969-2445,

e-mail: rbrans@uos.de

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Polyaminopropyl biguanide (PAPB) and polyhexamethylene biguanide (PHMB) are polymeric biguanides which are usually subsumed under the term PAPB (INCI name, syn. polyhexanide). They are widely used as disinfectant or preservative in wound care, cleansing or cosmetic products.¹⁻⁵

Case Report

A 52-year-old male kitchen aid had suffered from work-related hand eczema for 3 years when presenting in our department (Fig. 1). Patch tests were performed and read according to the guidelines of the German Contact Dermatitis Research Group (DKG)⁶ using the DKG baseline series, the DKG series for topical preparations, preservatives, rubber, and disinfectants as well as a selection of patient's own products, including skin care products (tested as is). Patch tests were removed on day (D) 2. A positive reaction to PHMB (2.5% aq., Chemotechnique Diagnostics, Vellinge, Sweden) was observed at D3 (+), D4 (++) and D7 (++) . The skin care product 'Excipial Repair Sensitive' (Galderma Laboratorium, Düsseldorf, Germany) which contains PAPB according to product labelling caused a doubtful reaction at D3 with slight increase (+) until D7. The patient had applied this product which is also marketed under the new designation 'Cetaphil Pro Itch Control Repair sensitive' on the hands several times a day for > 1 year. To further explore the clinical relevance, we performed a repeated open application test (ROAT) with 'Excipial Repair Sensitive' and 'Cetaphil Pro Itch Control Repair sensitive', twice daily for 7 days at the inner sides of both forearms causing an erythema at D4 and a papulovesicular reaction at D7 in both test areas (Fig. 2). We diagnosed a work-related hand eczema consisting of both irritant contact dermatitis and allergic contact dermatitis caused by sensitization to PHMB.

Discussion

Although their sensitization potential has been considered low, polymeric biguanides have recently gained attention as relevant sensitizers in cosmetic products.¹⁻³ Moreover, immediate type hypersensitivity reactions have been described.⁷ A recent study demonstrated that prevalence of sensitization to PHMB (2.0% aq.) was 1.1%¹ and thus, higher than previously reported.⁸ However, false positive patch test reactions must be considered.

Accepted Article

Patients with hand eczema frequently apply emollients as basic treatment. The impaired skin barrier and inflammation may increase the risk of sensitization to polymeric biguanides. In Germany, 'Excipial Repair sensitive / Cetaphil Pro Itch Control Repair sensitive' is widely used as emollient in patients with particular work-related hand eczema because this product is marketed as a set together with a popular skin barrier cream for wet work professions. The present case illustrates that PHMB in skin care products should be considered as potential cause or contributing factor of work-related hand eczema. In case of doubt, a ROAT is a useful additional tool to assess clinical relevance of particular weak patch test reactions to cosmetic products.

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Figure legends

Figure 1. Hand eczema of patient sensitized to polyhexamethylene biguanide

Figure 2. Positive repeated open application test (ROAT) to 'Excipial Repair sensitive' (right forearm) and 'Cetaphil Pro Itch Control Repair sensitive' (left forearm) on day 7 of application.



1462x952mm (96 x 96 DPI)



323x213mm (300 x 300 DPI)