

Allergic contact dermatitis to caprylyl glycol: A novel 'para-preservative' allergen

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No conflict of interest

Keywords: case report, caprylyl glycol, eyelid

Preservatives are amongst the commonest allergens in cosmetic products.¹ Here we present a case of allergic contact dermatitis to caprylyl glycol, a “para-preservative” in cosmetics.

Case report

A 37-year-old female was seen in the contact dermatitis unit with a six-month history of eyelid dermatitis. She had a history of intermittent facial dermatitis three years prior; this was attributed to the patients nail varnish, as it improved with avoidance. The patient had a history of childhood asthma and hayfever. The patient was patch tested to the hospital baseline series, a face series, an artificial nails series, relevant parts of the hair dressing

series and her own products appropriately applied. Allergens were applied in Finn chambers mounted on Scanpore tape and readings were taken on day (D) 2 and D4 according to International Contact Dermatitis Research Group guidelines. There were positive reactions to caprylyl glycol 1% white soft petrolatum prepared in the hospital pharmacy from neat material (+), phthalic anhydride 5% pet. (+), adipic acid 5% pet. (+) and two of the patient's own nail varnishes on D2 and D4 (Figure 1). As reactions to caprylyl glycol are rare, a repeat patch test was undertaken for caprylyl glycol and a further positive reaction (+) was confirmed on D2. Caprylyl glycol was present in the patient's cosmetic products (a blusher and long-lasting foundation), confirming the relevance of the reaction. The patient's eyelid dermatitis cleared with avoidance. The nail varnish allergies were considered of past relevance, confirming the patients' previous reactions to nail varnishes.

Discussion

Over the years, several traditional preservatives have been criticized due to a variety of safety concerns. As a result, there has been growing interest in alternative preservatives, which we have termed 'para-preservatives'. Para-preservatives allow a reduction in use of more traditional preservatives. Caprylyl glycol belongs to the family of 1,2 glycol compounds.² It is used as an antimicrobial, a skin and hair conditioning agent, and as a viscosity controlling agent.³ Due to its safety profile and multifunctional properties, it is increasingly being used in cosmetics and personal care products at a range of concentrations of (0.5%-1%) in leave on products.³ Examples of other para-preservatives include: Glycerin esters, essential oils, organic acids, plant extracts, peptides and others. Allergic contact dermatitis to caprylyl glycol has not been reported before. However, reactions to other 'glycols' have been reported such as: propylene glycol, pentylene glycol, and hexylene glycol.^{4, 5} Cross reactions between the different glycols is unclear due to lack of relevant studies. Caprylyl glycol has been part of our hospital extended facial series for over two years with no previous positive reactions (negative in over 1000 patients). Given its

increased use in the cosmetic industry, we recommend consideration of adding this allergen to the extended face/cosmetic series.

References:

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Figure 1: + reaction to phthallic anhydride, adipic acid and caprylyl glycol on D4.

Authors contributions:

Firas Constantin Kreeshan: Conceptualization; data curation; formal analysis; investigation; methodology; project administration; resources; supervision; validation; writing-original draft; writing- review and editing. **Jason David Louis Williams:** Conceptualization; data curation; formal

analysis; investigation; methodology; project administration; resources; supervision; validation; writing-original draft; writing- review and editing.

