

First case of contact dermatitis caused by hydroxypropyl tetrahydropyrantriol used in an anti-ageing cream

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Hydroxypropyl tetrahydropyrantriol (Pro-Xylane™) has been widely used in cosmetics since 2006 as a 'natural' anti-ageing agent derived from beech wood. We report the first case of contact dermatitis induced by hydroxypropyl tetrahydropyrantriol.

Case Report

A 65-year-old woman was referred to us for two episodes of eyelid contact dermatitis related to anti-ageing creams: Revitalift® (L'Oreal, Paris, France) and Néovadiol®

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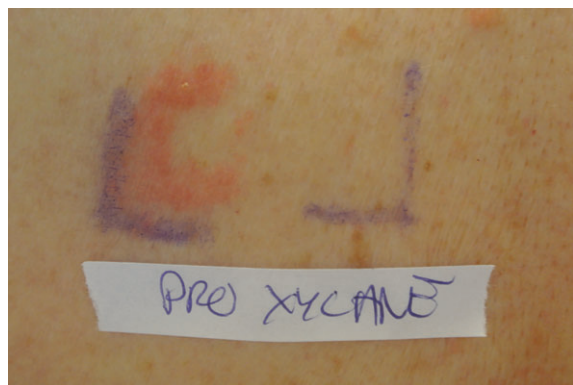


Fig. 1. Positive test reaction to hydroxypropyl tetrahydropyrantriol.



Fig. 2. Positive test reaction to Substiane serum®.

(Vichy, Vichy, France). The patch tests, performed with the European baseline and a cosmetics series, showed only a benzophenone allergy, which was not relevant to the current problem. The products could not be tested, as the patient had thrown them away before the consultation. A few months later, she suffered from a third flare-up of dermatitis, after Substiane serum® (La Roche-Posay, Vichy, France) application. New tests were performed with the complete components of the serum provided by La Roche-Posay at the concentration used in the product. Patch tests, performed with IQ chambers® (Chemotechnique, Vellinge, Sweden), showed positive reactions [+ on day (D)2, ++ on D4] to the Substiane serum® 'as is' and to hydroxypropyl tetrahydropyrantriol 9% in a mixture of alcohol and water (50:50) (Figs. 1 and 2). Five control patients (5 women who regularly used anti-ageing creams) showed negative results of hydroxypropyl tetrahydropyrantriol tests. This ingredient was considered to be the culprit, because it was also contained in the two previously incriminated creams (Revitalift® and Néovadiol®).

Discussion

Hydroxypropyl tetrahydropyrantriol, also named Pro-Xylane™ in the commercial products and in the literature, was developed by Lancôme in 2006.

Pro-Xylane™ is a sugar–protein hybrid made from xylose, a sugar found abundantly in beech trees. It is known to stimulate the production of glycoaminoglycans and heparan sulfate proteoglycan expression, to induce higher deposition of basement membrane and dermal–epidermal junction (DEJ) proteins, and to increase collagen VII gene expression in the reconstructed skin model. Hence, it is supposed to have beneficial effects in aged skin by restoring DEJ integrity and by increasing the firmness of the skin (1, 2). This 'natural' anti-ageing component is widely commercialized, with 170 million unit being sold in >150 different products. Many studies and tests, currently under publication by Lancôme, have been performed, but no negative or adverse side effects associated with Pro-Xylane have been reported. When asked, l'Oreal mentions three cases of side effects with Substiane® unrelated to Pro-Xylane™. Allergies to xylose derivatives are rarely reported, and none to hydroxypropyl tetrahydropyrantriol have been reported (3).

Conclusion

This is the first reported case of contact dermatitis caused by hydroxypropyl tetrahydropyrantriol, in spite of its widespread use.

References

- 1 Pineau N, Carrino D A, Caplan A I, Breton L. Biological evaluation of a new C-xylopyranoside derivative (C-Xyloside) and its role in glycosaminoglycan biosynthesis. *Eur J Dermatol* 2011; **21**: 359–370.
- 2 Sok J, Pineau N, Dalko-Csiba M et al. Improvement of the dermal epidermal junction in human reconstructed skin by a new c-xylopyranoside derivative. *Eur J Dermatol* 2008; **18**: 297–302.
- 3 Wilkinson M, Powis R A. Octyldodecyl xyloside: a novel contact allergen. *Contact Dermatitis* 2011; **35**: 302–309.