

The unsuspected power of mare's milk

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The use of protein derivatives is an increasing trend in the cosmetics industry; however, they are potential causes of immunological contact urticaria (1, 2). The route of sensitization to proteins can be gastrointestinal, respiratory, or percutaneous. Here, we report a patient reacting to a cosmetic cream containing mare's milk.

Case Report

A 45-year-old Caucasian woman consulted S. K. because of rapidly occurring swelling of the eyelids and itchy wheals on the face a few minutes following the application by the beautician of Spinée® Caresse d'eau (Spinée Cosmétologie, Gedinne, Belgium), a facial cream advertised for use on dry, sensitive skin, and for skin care in individuals with rosacea. Its ingredients are shown in Fig. 1. Previous applications during a 3-month period had been well tolerated.

In order to detect the culprit component, and because of the urticarial reaction to the cosmetic, prick tests were performed with the cream 'as is', and an immediate reaction occurred. The cosmetic manufacturer was contacted,

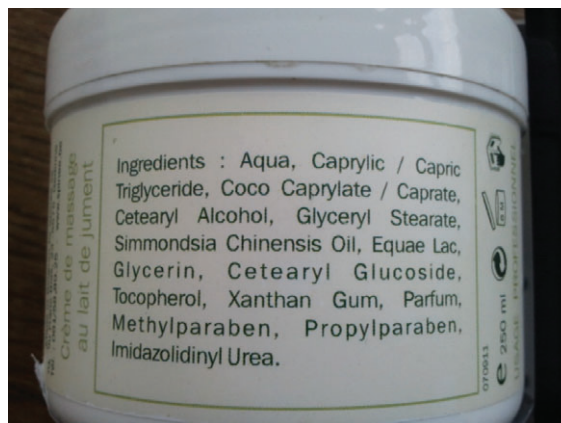


Fig. 1. Composition of the culprit cream, Spinée® Caresse d'eau.

and provided the ingredients, namely mare's milk and milk powder (as used in the product and diluted with water), which were also prick tested, together with cow's milk. After a few minutes, positive test reactions were observed, except to the latter (Fig. 2).

The total IgE level was 120 kU/l. Measurement of specific IgE in the patient's serum was performed by means of radio-allergosorbent tests (Elia® Unicap 250; Phadia GmbH, Freiburg, Germany), and positive results were obtained for horse milk (>100 kU/l), α -lactalbumin (Bos d4) (77 kU/l), and cow's milk (71 kU/l). However, the patient could drink cow's milk without any adverse

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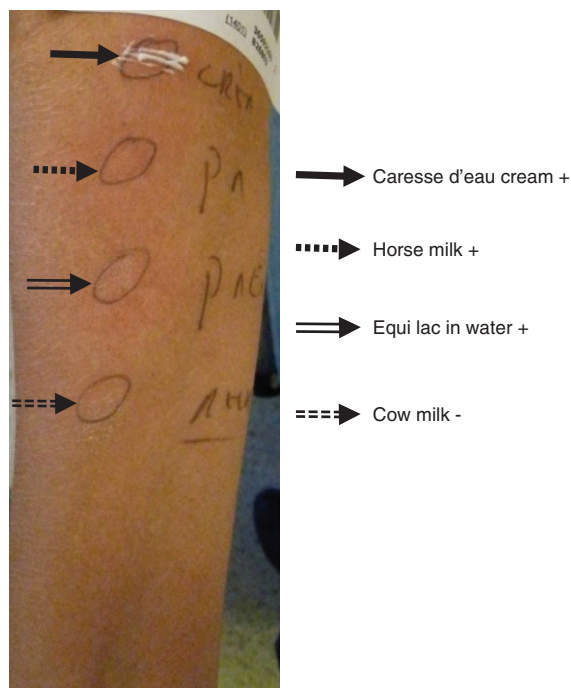


Fig. 2. Positive prick test results with the Spinée® Caresse d'eau cream, mare's milk, and milk powder suspended in water.

reaction. We did not ask her to drink mare's milk. IgE specific for β -lactoglobulin (Bos d5), casein (Bos d8), horse dander and horse meat was not detected.

Discussion and Conclusion

Both plant-derived and animal-derived protein allergens in cosmetics have been reported as allergenic culprits:

for example, an immediate-type reaction to a fish-derived elastin-containing cosmetic cream in a patient with a history of respiratory distress after inhalation of smoke from grilled fish (3), and a case of rhinitis, choking and systemic urticaria following the ingestion of egg in a patient sensitized by weekly treatment of her hair (for 1 year) with a homemade egg-white-based mask (4).

β -Lactoglobulin (Bos d5) and α -lactalbumin (Bos d4) – both of which are whey proteins – and caseins (including κ -casein Bos d8) are the major mare's milk allergens (5). Horse Equ c1 (*Equus caballus*), a lipocalin, is considered to be the major allergen of horse dander, and Equ c3 is a serum albumin showing cross-reactivity with other mammals' serum albumins (1, 6). Although allergy to mare's milk seems to be rare, a few cases of food anaphylaxis (7–9) and a case of protein contact dermatitis caused by a cosmetic containing it (5) have been reported in the literature.

The patient presented here thus suffers from immunological contact urticaria caused by α -lactalbumin in a cosmetic cream containing mare's milk. IgE-mediated symptoms can be provoked directly following contact with cosmetics based on mare's milk containing casein, α -lactalbumin, or β -lactoglobulin. They can, however, also be attributable to cross-reactivity with: (i) other milk types, rarely cow's milk; (ii) dander and epithelium (Equ c1 and c2); or (iii) meat (Equ c3 horse serum albumin) (5). Albumins seem to be the common proteins provoking allergic cross-reactions between mare's milk and beef (7); however, our patient, who was allergic to mare's milk, had no IgE specific for serum albumin. Furthermore, she could drink cow's milk without any problems.

References

- 1 Sastre J. Molecular diagnosis in contact urticaria caused by proteins. In: *Contact Urticaria Syndrome*, 1st, Chapter 13 edition, Giménez-Arnau A M, Maibach H I (eds): Boca Raton, FL, CRC Press, 2015: pp. 113–128.
- 2 Amaro C, Goossens A. Immunological occupational contact urticaria and contact dermatitis from proteins: a review. *Contact Dermatitis* 2008; **58**: 67–75.
- 3 Nishida K, Tateishi C, Tsuruta D et al. Contact urticaria caused by fish-derived elastin-containing cosmetic cream. *Contact Dermatitis* 2012; **67**: 171–172.
- 4 Antonicelli L, Braschi M C, Cinti B. Hen egg hair mask-induced food allergy: a case report. *Eur Ann Allergy Clin Immunol* 2011; **43**: 127–128.
- 5 Doyen V. Protein contact dermatitis and food allergy to mare milk. *Ann Allergy Asthma Immunol* 2013; **10**: 390–391.
- 6 Wal J M. Bovine milk allergenicity. *Ann Allergy Asthma Immunol* 2004; **93** (Suppl. 3): 2–11.
- 7 Robles S, Torres M J, Mayorga C et al. Anaphylaxis to mare's milk. *Ann Allergy Asthma Immunol* 2007; **98**: 600–602.
- 8 Fanta C, Ebner C. Allergy to mare's milk. *Allergy* 1998; **53**: 539–540.
- 9 Gall H, Kalveram C M, Sick H, Sterry W. Allergy to the heat-labile proteins alpha-lactalbumin and beta-lactoglobulin in mare's milk. *J Allergy Clin Immunol* 1996; **97**: 1304–1307.