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Magnolia officinalis bark extract, a recently identified contact allergen in 'anti-ageing' cosmetics

Katrien Ghys, Armando De Palma, Alix Vandevenne, Justine Werbrouck and An Goossens

Department of Dermatology, University Hospitals KU Leuven, 3000 Leuven, Belgium

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Cosmetic anti-ageing products containing *Magnolia officinalis* bark extract (INCI) recently appeared on the market. Here, we describe 3 cases observed between May 2014 and February 2015.

Case Reports

Case 1

In May 2014, a 55-year-old non-atopic woman consulted because of itchy eczematous lesions on the neck and the V-neck region that had developed 2 months previously (Fig. 1); she had sporadically experienced similar lesions on the face as well. The lesions had been treated with a local corticosteroid and a hydrating cream, upon which the eczema had disappeared, but it had recurred after cessation of the treatment. The patient had continued to use several cosmetics. In view of the anatomical distribution, both allergic and photo-allergic contact dermatitis were considered. We performed patch tests, by the use of Ultra Q[®] chambers (Chemotechnique, Vellinge, Sweden) covered with Mefix[®] (Mölnlycke Healthcare, Göteborg, Sweden), with the European baseline series (Chemotechnique) and the patient's own cosmetic products ('as is'), read according to ICDRG guidelines. We also performed photo-patch testing with the photo-patch test series (Chemotechnique), with readings at day (D)2, D4, and D7. Positive reactions were observed to Eucerin[®] volume filler day cream (Beiersdorf, Hamburg, Germany) (+ at



Fig. 1. Erythematous scaling lesions on the neck and V-neck region in case 1.

D2, D4, and D7) and to tixocortol pivalate (+ at D7). In September 2014, patch tests were again performed with the corticosteroid series (1) and with the compounds of the cream, kindly provided by the manufacturer. A positive reaction was observed only to *Magnolia officinalis* bark extract 0.5% in pet. as provided by the company, and the reaction to tixocortol pivalate was confirmed (+ at D2, D4, and D7); however, no clinical relevance could be found for the latter reaction. We later also tested *Magnolia grandiflora* bark extract (INCI) [0.05% in pet., as kindly provided by Clinique, Estée Lauder (Brussels, Belgium)], which is also used in cosmetics. There were positive (+) reactions at D2 and D4.

Case 2

A 76-year-old non-atopic woman with rosacea consulted in November 2014 with scaling erythematous

Correspondence: Professor An Goossens, Contact Allergy Unit, Department of Dermatology, University Hospital St Rafaël, Katholieke Universiteit Leuven, Kapucijnenvoer 33, B-3000 Leuven, Belgium. Tel: +32 16 33 78 60; Fax: +32 16 33 70 12. E-mail: an.goossens@uzleuven.be

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lesions on the face, mainly on the forehead and the temporal area. She was using several cosmetic products (including Eucerin® volume filler night cream), and she dyed her hair regularly. She had not noticed a clear relationship with any of the products with which she came into contact. Previous treatment consisted of a mild topical corticosteroid cream and a preparation by the pharmacist containing metronidazole 2%. Patch testing was performed by use of the same technique as in case 1, with the European baseline and cosmetics series, the cosmetic products used, and the ingredients of Eucerin® volume filler cream. At D2 and D4, there were positive reactions to Eucerin® volume filler night cream and to *M. officinalis* bark extract 0.5% pet. We then also tested the extract of *M. grandiflora* bark, but this remained negative at D2 and D4. Also, a repeated open application test (ROAT) with this latter extract remained negative.

Case 3

A 67-year-old woman was seen in our department in February 2015. She presented with itchy and scaly erythematous lesions on the face and V-neck region, as well as recurrent oedema of the eyelids since November 2014. Pathological investigation of a biopsy specimen of the lesions was consistent with a drug eruption. She was treated for rheumatoid arthritis with certolizumab (Cimzia®; UCB Pharma, Braine l'Alleud, Belgium), the use of which was then stopped for 6 weeks. However, the lesions did not improve. She also did not notice any change after the reintroduction of Cimzia®. Because the lesions were eczematous, we asked her to stop using her cosmetics, and treated her with topical corticosteroid creams. Thereafter, the lesions completely disappeared, and have not recurred since then. Patch tests were performed, by use of the above methods, with the baseline and cosmetic series, and the patient's own cosmetic products, including Nivea® Cellular anti-age day cream SPF 15 (Beiersdorf). As the label mentioned the presence of *M. officinalis* bark extract, this was tested as well. There were positive reactions to the cream tested 'as is' (+ at D2 and D4) and to the extract (++ at D2 and D4; Fig. 2). At the second reading, the patient also brought an eye cream and serum from the same brand, which also contained the same plant extract. This patient also reacted positively to *M. grandiflora* bark extract (+ at D2 and D4).

Twenty control subjects were tested with the same *M. officinalis* bark extract and 10 with *M. grandiflora* bark extract, and remained completely negative.



Fig. 2. Strong positive reaction to *Magnolia officinalis* bark extract in case 3.

Discussion

M. officinalis bark extract is obtained from the *M. officinalis* tree, which is native to Chinese mountains and valleys; it belongs to the Magnoliaceae family and contains bio-active ingredients, such as magnolol, honokiol, 4-O-methylhonokiol, and obovatol, that allegedly have anti-inflammatory, antioxidant, anticancer, antidepressant and hepatoprotective effects (2–5). It has been used in traditional Chinese medicine for the treatment of 'gastrointestinal problems' and 'asthmatic cough'. Recently, its extract has also been used in certain 'anti-ageing' cosmetics, because it is believed to increase the quantity and volume of the adipocytes, and to stimulate the synthesis of adiponectine, which regulates collagen production in the dermal fibroblasts. This is supposed to have a 'filling effect' on the contour of the face.

Primary sensitization to other *Magnolia* species, including *M. grandiflora* that contain sesquiterpene lactones has rarely been reported; however, cross-reactions in patients sensitized to other sesquiterpene lactone-containing plants are not so rare. Guin et al. (6) described a patient suffering from a chronic lichenified dermatitis who had contact allergy to several such plants, and presented with an extremely severe reaction to *M. grandiflora* as well. Also, de Corres (7) described positive reactions to *M. grandiflora* in 6 cases reacting to multiple other sesquiterpene lactone-containing species. *M. grandiflora* bark extract is also used in certain cosmetics. Patch tests with a 0.05% dilution in pet. gave positive reactions in cases 1 and 3, but both a patch test and a ROAT in case 2 remained negative. This shows that cross-reaction between both types of the Magnoliaceae family is possible. At present, it is not clear whether *M. officinalis* bark extract contains sesquiterpene lactones. According to Christensen (pers. comm.), lignans with phenols in positions where they

may oxidize to quinones could be the allergens that may cross-react with sesquiterpene lactones (5).

Very recently, another case of allergic contact dermatitis caused by *M. officinalis* has been published (8).

Conclusion

Here, we describe 3 patients who were diagnosed with allergic contact dermatitis caused by *M. officinalis* bark

extract present in anti-ageing cosmetics. In view of the short period in which these cases were observed and a recently described fourth case, this new cosmetic ingredient might not be such a rare allergen.

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