

Allergic contact dermatitis to Tinosorb S, *Scutellaria baicalensis*, and other emerging allergens in cosmetics

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Eyelid eczema is a common reason for dermatological consultations. Allergic contact dermatitis is the most common diagnosis in patients with eyelid eczema undergoing patch tests.¹ Sometimes systemic allergic dermatitis may also present exclusively as eyelid dermatitis.^{2,3} Patch tests are highly recommended in eczema patients with eyelid involvement.¹

reactions recorded (Table 1; Supporting Information, Figure S1) including two ingredients of the sunscreen (*Scutellaria baicalensis* root extract and Tinosorb S). The manufacturer of the foundation provided coded combinations of ingredients. Patch tests with them were positive for the mixture of propylene carbonate, cyclopentasiloxane, and disteardimonium hectorite. An angry-back reaction involving three other components was observed and, for this reason, they were patch tested separately, two of

1 | CASE REPORT

A 39-year-old female, nonatopic housewife consulted with a 2-year history of pruritic erythematous scaly plaques involving both eyelids and periorbital skin. Lesions resolved after application of topical corticosteroids and pimecrolimus ointment; however, a quick relapse after treatment discontinuation was observed (Figure 1).

Patch tests with the baseline series of the Spanish Contact Dermatitis Research Group (GEIDAC), a fragrance series (Chemotechnique Diagnostics, Vellinge, Sweden), and the patient's own products were performed. Exposure times and scoring readings were conducted according to ESCD guidelines.⁴ Two cosmetic products provided by the patient and patch tested "as is" were positive: a sunscreen (Anthelios ultra BB cream teintée SFP 50+, La Roche Posay, L'Oreal, Paris, France) and a foundation (Deliplus long lasting foundation, Wecoclors, Barcelona, Spain; Table 1). Further patch tests with the individual ingredients of both products provided by the manufacturers were performed and a number of positive

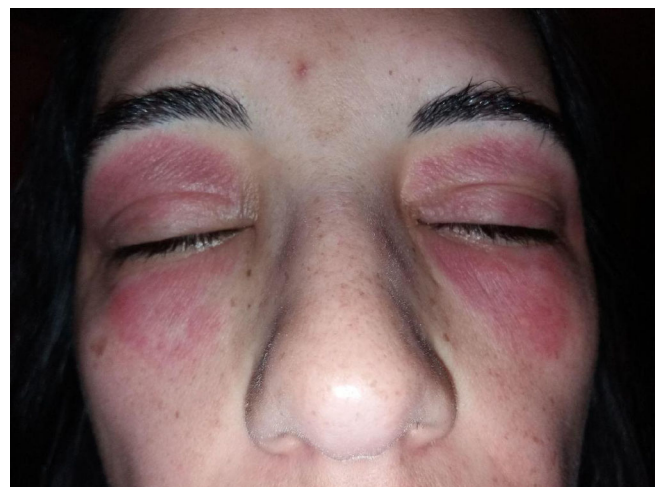


FIGURE 1 Erythematous, slightly infiltrated, and scaly lesions symmetrically involving both eyelids and periorbital skin

TABLE 1 Patch test results

Patched ingredients and allergens	Positive reactions
First step: GEIDAC baseline series; Fragrance series; and 45 patients' own products "as is" (Readings on day [D] 2, D4, and D7)	Anthelios ultra BB cream teintée (++/+/++) Long lasting foundation 16 h Deliplus (–/ +/?)
Second step (individual ingredients)	
Anthelios ultra BB cream teintée individual ingredients: (22 ingredients) (Readings on D2, D4, and D7)	Bis-ethylhexyloxyphenol methoxyphenyl triazine (Tinosorb S) 5% pet. (+/?/+) Scutellaria baicalensis root extract 0.2% 50/50 (?+/+/++) Anthelios ultra BB cream teintée "as is" (–/+/++)
Long lasting foundation 16 h Deliplus (32 coded ingredients; Readings on D2, D3, and D7)	Propylene carbonate, cyclopentasiloxane, and disteardimonium hectorite (+/+/+) Long lasting foundation 16 h Deliplus "as is" (+/+) Angry back reaction involving coded ingredients 1, 6, and 7 (on D3)
Long lasting foundation 16 h Deliplus (coded ingredients no. 1, 6, and 7) (Readings on D4 and D7)	No. 1: propylene glycol (+++/+) No. 6: talc, CI 77 491, and dimethicone/methicone copolymer (+/+)

Note: The ingredients of Anthelios ultra BB cream teintée SPF 50+ and Deliplus long lasting foundation were kindly provided by manufacturers L'Oréal (Paris, France) and Wecolors (Barcelona, Spain) at the same concentration as in the final product.

Note: Patch tests were prepared on Finn Chambers (SmartPractice, Tuusula, Finland), applied on the patient's back, and fixed with Omnifix E (Hartmann, Heidenheim, Germany). Exposure times and scoring readings were according to the ESCD guidelines.⁴ The baseline series (TRUE Test) was supplied by allergEAZE, SmartPractice (Calgary, Canada), and supplementary allergens by Chemotechnique Diagnostics (Vellinge, Sweden).

Abbreviations: GEIDAC, Spanish Contact Dermatitis Research Group.

them testing positive, namely, propylene glycol and the mixture of talc, CI 77 491, and dimethicone/methicone copolymer (Table 1; Supporting Information, Figure S1). The patient refused further patch tests with the individual components of the positive mixtures of ingredients. After following specific avoidance recommendations, no new recurrences of the dermatitis occurred. Patch tests on 16 healthy controls with all substances positive in the patient were negative.

2 | DISCUSSION

S. baicalensis (*S. baicalensis* root extract, *S. baicalensis* sprout extract, CAS no. 94279-99-9) is a Lamiaceae subspecies high in flavonoids (baicalin and baicalein), terpenoids, and polysaccharides with supposed antiviral, antibacterial, and antineoplastic properties. The extract has been widely used in traditional Chinese medicine and by the cosmetic industry.⁵ The extract composition depends on geographic origin and the purification method. In animal models of allergic contact dermatitis, its topical use seems beneficial.^{6,7}

Three cases of topical sensitization to *S. baicalensis* root extract have been published involving three patients with facial eczema: a 49-year-old female using a night cream with resveratrol, baicalein, and vitamin E⁸; a 37-year-old female using Anthelios BB cream teintée SPF 50+ sunscreen⁹; and a 53-year-old man using Anthelios sunscreen.¹⁰ Patch tests in 15 and 10 controls were performed by Gallo et al⁸ and Scheers et al,⁹ respectively, with negative results.

Tinosorb S (bis-ethylhexyloxyphenol methoxyphenyl triazine, CAS no. 187393-00-6) is a strong broad-spectrum ultraviolet (UV) A +B filter widely used in Europe. Unlike Tinosorb M, which is

composed of a combination of methylene bis-benzotriazolyl tetramethylbutylphenol, decyl glucoside, propylene glycol, and xanthan gum,¹¹ Tinosorb S only contains bis-ethylhexyloxyphenol methoxyphenyl triazine and no other ingredients. Bis-ethylhexyloxyphenol methoxyphenyl triazine is an oil-soluble and water-resistant hydroxyphenyltriazines derivative, chemically modified to achieve a wide protective spectrum against UVB and UVA. It is very stable after prolonged solar photostimulation¹² and capable of stabilizing other UV filters such as butyl methoxydibenzoylmethane (INN: Avobenzene) and ethylhexyl methoxycinnamate.¹³ After reviewing English and Spanish language articles indexed in the MEDLINE and Google Scholar databases, we did not find any previously published cases of cutaneous sensitization to Tinosorb S. Eleven individuals patch tested with Tinosorb S by Shaw et al¹⁴ were all negative. We did not find any previous reports about sensitization to the mixture "propylene carbonate, cyclopentasiloxane, and disteardimonium hectorite" (an organoclay), or the mixture "talc, CI 77491, and dimethicone/methicone copolymer," or any of their individual components.

We again highlight the importance of systematically patch testing with the cosmetics and hygiene products brought in by our patients, as well as with the individual ingredients whenever positive. The identification of emerging allergens in cosmetics mainly depends on this approach. Sunscreens constitute a potential cause of eyelid or facial allergic contact dermatitis, and should be considered in patients with refractory eczema on these anatomical sites.

ACKNOWLEDGEMENTS

We thank the manufacturers La Roche-Posay, L'Oréal (Paris, France) and Deliplus, Wecolors (Barcelona, Spain) for kindly providing the ingredients for patch testing our patient.

CONFLICT OF INTEREST

Authors do not have any conflicts of interests to declare.

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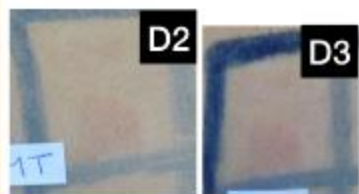
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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.

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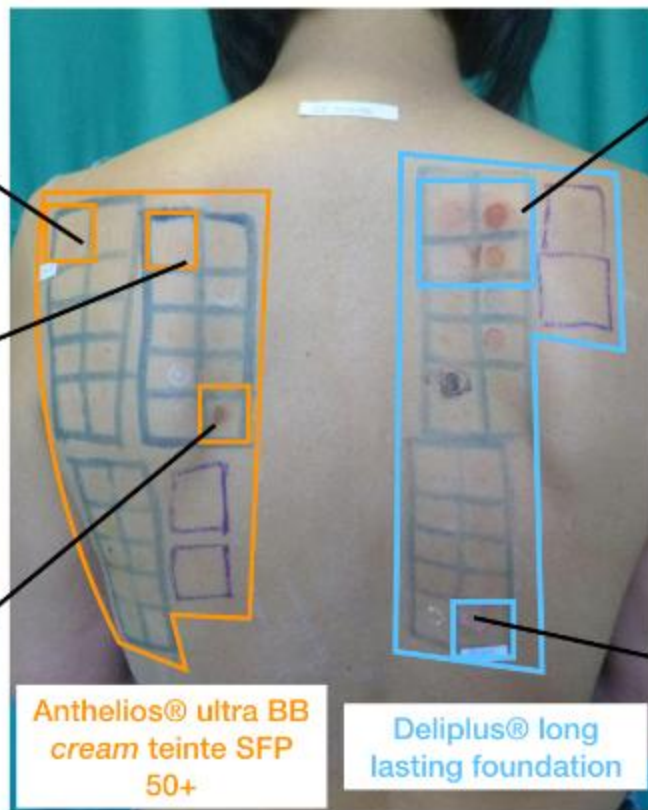
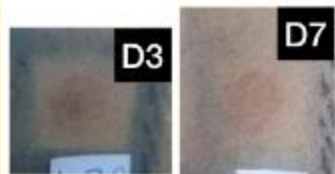
Tinosorb S ®



**Scutellaria
baicalensis root
extract**



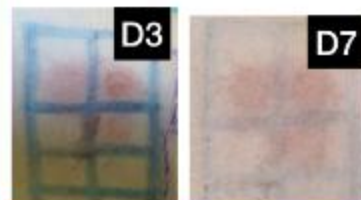
**Anthelios ® ultra BB
cream teinte as is**



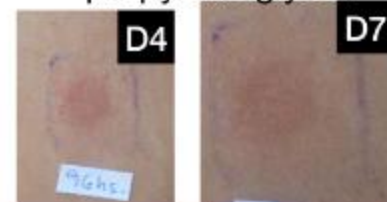
**Anthelios® ultra BB
cream teinte SFP
50+**

**Deliplus® long
lasting foundation**

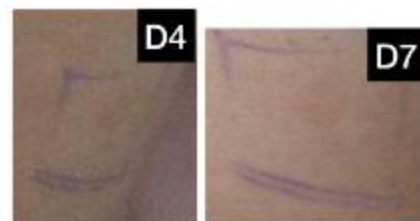
**Ingredients n° 1, 6 , 7
Angry Back**



**Ingredient n° 1:
propylene glycol**



**Ingredient n° 6: Talc +
CI77491 + Dimethicone/
Methicone copolymer**



**Ingredient n°20: Propylene
carbonate + ciclopentasiloxane +
disteardomonium hectorite**

