



**ALLERGIC CONTACT DERMATITIS TO TINOSORB S, *SCUTELLARIA BAICALENSIS*
AS WELL AS OTHER EMERGING ALLERGENS IN COSMETICS**

Loreto Luna-Bastante (1), María-Elena Gatica-Ortega (1), María-Antonia Pastor-Nieto (2,3), Laura Vergara-de-la-Campa (1), Blas A. Gómez-Dorado (1), Laura Alonso-Naranjo (1), Cristina Pérez-Hortet (1).

Dermatology Dept. Toledo Hospital Complex, Toledo, Spain (1),

Dermatology Dept. University Hospital of Guadalajara, Guadalajara, Spain (2),

Alcalá de Henares University, Alcalá de Henares, Madrid, Spain (3).

Correspondence

María-Elena Gatica-Ortega

Carretera de Cobisa s/n cp: 45071

Dermatology Department

Toledo Hospital Complex (Toledo, Spain)

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E-mail: mariaelenagatica@yahoo.com.ar

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KEY WORDS

Allergic contact dermatitis; bis-ethylhexyloxyphenol methoxyphenyl triazine; Tinosorb S; CAS no. 187393-00-6; *Scutellaria baicalensis* extract; CAS no. 94279-99-9; propylene carbonate, cyclopentasiloxane and disteardominium hectorite; organoclay; propylene glycol; talc, CI 77491, dimethicone/methicone copolymer;.

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).

CASE REPORT

A 39-year-old female, non-atopic housewife consulted with a two-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), as well as 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+) and a foundation (Deliplus long lasting foundation) (Table 1). Further patch tests with the individual ingredients of both products provided by the manufacturers were performed and a number of positive reactions recorded (Table 1; Online supplemental Figure 2) 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 disteardominium hectorite. An angry-back reaction involving three other components was observed and, for this reason, they were patch tested separately, two of them resulting positive, namely propylene glycol and the mixture of talc, CI 77491, and dimethicone/methicone copolymer (Table 1) (Online supplemental Figure 2). 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.

DISCUSSION

Scutellaria baicalensis (*Scutellaria baicalensis* root extract, *Scutellaria 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 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 *Scutellaria 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 E (8), a 37-year-old female using Anthelios BB cream teintée SPF 50+ sunscreen (9) and a 53-year-old man using Anthelios sunscreen (10). Patch tests in 15 and 10 controls were performed by Gallo et al and Scheers et al, respectively, with negative results (8,9).

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 solely 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 photostimulation (12) and capable of stabilizing other UV filters such as butyl methoxydibenzoylmethane (Avobenzon) and ethylhexyl methoxycinnamate (13). After reviewing the English and Spanish-language indexed articles 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 al were all negative (14). Neither we have found previous reports of sensitization to the mixture “propylene carbonate,

cyclopentasiloxane and disteardominium 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.

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TABLES

TABLE 1: PATCH TEST RESULTS

Patched ingredients and allergens	Positive reactions
<p>First step: GEIDAC baseline series; Fragrance series; and 45 patients' own products "as is" (Readings on day [D] 2, D4 and D7)</p>	<p>Anthelios ultra BB cream teintée (++/++/++)</p> <p>Long lasting foundation 16 h Deliplus (-/ +/ ?)</p>
<p>Second step (individual ingredients)</p>	
<p>Anthelios ultra BB cream teintée individual ingredients: (22 ingredients) (Readings on D2, D4 and D7)</p>	<p>Bis ethylhexyloxyphenol methoxyphenyl triazine (Tinosorb S) 5% pet. (+/ +/?+)</p> <p><i>Scutellaria baicalensis</i> root extract 0,2% 50/50 (?+/?+ ++)</p> <p>Anthelios ultra BB cream teinte "as is" (-/ +/ ++)</p>
<p>Long lasting foundation 16 h Deliplus (32 coded ingredients) (Reading D2, D3 and D7)</p>	<p>Propylene carbonate, cyclopentasiloxane and disteardominium hectorite (+/+/+)</p> <p>Long lasting foundation 16 h Deliplus "as is" (+/ +)</p> <p>Angry back reaction involving coded ingredients 1, 6 and 7 (on D3)</p>
<p>Long lasting foundation 16 h Deliplus (coded ingredients n° 1, 6 and 7) (Reading D4 and D7)</p>	<p>N° 1: Propylene glycol (+++/+)</p> <p>N° 6: talc, CI 77491, and dimethicone/methicone copolymer (+/ +)</p>

Abbreviations: GEIDAC, Spanish Contact Dermatitis Research Group.

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

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 conducted according to the ESCD guidelines (4). The baseline series (TRUE-Test) were supplied by AllergEaze, SmartPractice (Calgary, Canada), and supplementary allergens by Chemotechnique Diagnostics (Vellinge, Sweden).

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FIGURES

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

