Contact Dermatitis

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Allergic Contact Dermatitis to Isobutylamido Thiazolyl Resorcinol (Thiamidol)

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We report a case of facial allergic contact dermatitis to isobutylamido thiazolyl resorcinol (Thiamidol), which has become available in cosmetics in recent years.

1 | Case Report

A 76-year-old non-atopic female presented with a facial rash for 1 year (Figure 1a). The rash was initially suspected to be a side effect of adalimumab for Crohn's disease, which was therefore discontinued. During the same period, she also applied Eucerin Hyaluron-Filler Day and Night creams and Sun Pigment Control SPF50+.

The patient was patch tested with the series listed in Table 1, own products, and possible allergens listed on the products. A photopatch test was also performed. The patient reacted positively to all Eucerin products tested as is (++). Thus, isobutylamido thiazolyl resorcinol, an ingredient in all the products, was procured (Fluorochem EU Limited, Cork, Ireland), diluted, and tested at different concentrations in petrolatum. A positive reaction to 0.2% and doubtful reactions to 0.06% and 0.02% of the substance were observed (Figure 1b), whereas patch testing with resorcinol was negative. Although photocontact allergy to benzophenone-3 was diagnosed, none of the patient's products contained benzophenone-3 (unknown relevance). The rash resolved after the patient discontinued using the products.

To exclude irritantancy and active sensitisation, 23 controls were tested with 0.2% isobutylamido thiazolyl resorcinol in petrolatum. No skin reactions were reported. Chemical analysis was performed using LC–MS, and isobutylamido thiazolyl resorcinol was found in all three products in concentrations between 0.11%–0.18%.

2 | Discussion

Isobutylamido thiazolyl resorcinol (N-[4-(2,4-Dihydroxyphenyl)-1,3-thiazol-2-yl]-2-methylpropanamide, CAS.1428450-95-6), a derivative of resorcinol, is a tyrosinase inhibitor, serving as a cosmetic skin-lightening ingredient [1]. Contact dermatitis to the substance was suspected in two participants (8%) in a control-trial study, and two confirmed cases of allergic contact dermatitis have recently been reported [1, 2].

Skin-lightening substances are important treatment options and frequently used in cosmetics. The market has expanded, and the new substances used are not automatically included in cosmetic patch test series. Therefore, possible contact allergy may not be diagnosed.

Despite publications on contact allergy to resorcinol and its derivatives [3–5], cross-reactions between the substances have not been established. Testing only with the commercially available

FIGURE 1 | (a) Eczematous rash on the face, allergic contact dermatitis caused by isobutylamido thiazolyl resorcinol, (b) positive patch test reactions to patient's own products and dilution series of isobutylamido thiazolyl resorcinol on reading day 3. The highest concentration tested (0.2%) was decided based on the concentration found in the products.

TABLE 1 | A list of test materials and patch test reactions.

Test materials	Vehicles and concentrations	Patch test reactions	
		Day 3/4	Day 7
Own products			
Eucerin Hyaluron-Filler Day Cream	100% (as is)	++	++
	50% pet.	+	+
Eucerin Hyaluron-Filler Night Cream	100% (as is)	++	++
	50% pet.	+	+
Eucerin Sun Pigment Control SPF50+	100% (as is)	++	+
	50% pet.	+	+
Resorcinol and its derivative			
Isobutylamido thiazolyl resorcinol (Thiamidol)	0.2% pet.	+	?
	0.06% pet.	?	?
	0.02% pet.	?	?
Resorcinol*	1% pet.	−	−
Other ingredients in patient's cosmetic products*			
Butyl methoxydibenzoylmethane	10% pet.	−	−
Bis-ethylhexyloxyphenol methoxyphenol triazine	10% pet.	−	−
Ethylhexyl triazone	10% pet	−	−
Ethylhexylglycerin	5% pet.	−	−
Benzyl alcohol	10% softisan	−	−

(Continues)

TABLE 1 | (Continued)

Test materials	Vehicles and concentrations	Patch test reactions	
		Day 3/4	Day 7
Phenoxyethanol	1% pet.	–	–
Cetearyl alcohol	20% pet.	–	–
Glycerol	10% aq.	–	–
Test series*			
Swedish baseline series		All negative	
Extended baseline series Malmö			
Cosmetic series			
Cheilitis series			
Plant series			
European photopatch test series**		+ only to benzophenone-3 (10% pet.)	+ only to benzophenone-3 (10% pet.)

Note: Pet, petrolatum; aq, aqua; –, negative reaction; ?, doubtful reaction; +, weak positive reaction; ++, strong positive reaction.
*Purchased from Chemotechnique MB Diagnostics AB, Vellinge, Sweden.
**The patient had a weak positive reaction to benzophenone-3 (irradiated). Photocontact allergy to benzophenone-3 with unknown relevance was diagnosed.

substance, resorcinol, may not be sufficient. In this report, patch testing with 0.2% isobutylamido thiazolyl resorcinol was confirmed to be safe, did not cause irritation or active sensitisation, and could elicit an allergic reaction. However, there is a need for further studies on contact allergy, patch test doses and possible cross-reactivity.

In conclusion, isobutylamido thiazolyl resorcinol is an emerging cosmetic ingredient in cosmetic products, which raises the possibility of it becoming a common allergen. In case of suspicion, the patient's own products, along with 0.2% isobutylamido thiazolyl resorcinol in petrolatum, should be patch tested.

Author Contributions

Thanisorn Sukakul: investigation, writing – original draft, writing – review and editing, conceptualization. **Jakob Dahlin:** conceptualization, investigation, writing – review and editing, methodology, resources, supervision. **Sigrid Lundgren:** investigation, writing – review and editing. **Josefin Ulriksdotter:** conceptualization, investigation, writing – review and editing. **Cecilia Svedman:** conceptualization, methodology, writing – review and editing, project administration, supervision.

Consent

The patient has given written informed consent for the publication of their clinical details and accompanying images.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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