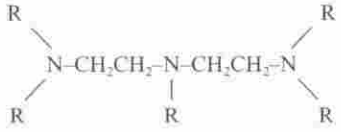
rubber gloves and Tego Diocto S® 1% pet. showed a positive reaction to Tego Diocto S® at 2, 3 and 4 days (+/++/++). Further patch tests with triethanolamine showed a positive reaction after 2 and 3 days. Patch tests with Tego Diocto S® 1% pet. in 10 healthy volunteers were negative.

Discussion

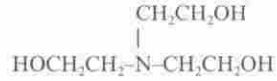
Tego Diocto S® is a liquid disinfectant used, at concentrations ranging from 0.3 to 1% in water, for the disinfection of surfaces and plant in various industries. It has high bactericidal, fungicidal and sporicidal activity associated with low toxicity. In Italy, it is widely utilized in the meat industry, bakeries, confectioneries, the milk industry, fruit and vegetable product manufacturers, the drinks industry and the pharmaceutical industry.

Tego Diocto S® is a blend of dioctyl-trioctyl-diethylenetriamine, alcohol, acetic acid, and polyoxyethylene glycerol trioleate. The structural formula of dioctyl-trioctyl-diethylenetriamine is



where R = octyl. Its chemical structure can be related to those of other aliphatic amines of known allergenic activity, particularly ethylenediamine

and triethanolamine



Dioctyl-trioctyl-diethylenetriamine and triethanolamine, besides belonging to the same class of organic compounds, display very similar physicochemical properties, including relatively high basicity. This high basicity is responsible for dioctyl-trioctyl-diethylenetriamine and triethanolamine being fully protonated at physiological pH. Protonation is necessary for dioctyl-trioctyl-diethylenetriamine to behave as a cationic surfactant. Dioctyl-trioctyl-diethylenetriamine and triethanolamine are both tertiary amines, and this explains the cross-reaction observed in our patient (1).

Although triethanolamine is a known sensitizer (2), to our knowledge, this is the first reported case of sensitization due to dioctyl-trioctyl-diethylenetriamine. Tego 51 and Tego 103 G, both derived from glycine, have previously been reported as sensitizers (3).

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Pigmented photoallergic contact dermatitis from musk ambrette

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Key words: pigmented contact dermatitis; photoallergic contact dermatitis; musk ambrette; aftershave lotion; cosmetics and toiletries.

Hyperpigmentation from allergic or photoallergic contact dermatitis has occasionally been reported, mainly among Japanese women (1, 2), due to cosmetics (1, 3) or dyes (2, 4–6). In 1987, Hayakawa et al. (7) reported a case of an airborne pigmented allergic contact dermatitis from musk ambrette in incense. A case of lichenoid contact dermatitis with violet-brown pigmentation from musk ambrette has also been reported (8).

Case Report

A 52-year-old male, working as a car driver, had a 4-year history of facial dermatitis. At the first visit,

Table 1. Patch and photopatch test results

		Patch	Photopatch
European standard series		–	
after-shave lotion	as is	–	++*
musk ambrette	5% pet.	–	++*
eugenol	1% pet.	–	
isoeugenol	1% pet.	–	
geraniol	1% pet.	–	
oak moss absolute	1% pet.	–	–
cinnamyl alcohol	1% pet.	–	
cinnamyl aldehyde	1% pet.	–	
hydroxycitronellal	1% pet.	–	

* Pigmentation observed 60 days after testing.

only diffuse cutaneous brownish pigmentation restricted to the beard area was observed, but he described pruriginous erythema and scaling, especially during the summer. Acute lesions improved with topical corticosteroids, but progressive pigmentation developed. Mucosal lesions were absent. He denied ingestion of drugs, but he had changed his daily after-shave lotion soon before the onset of the dermatitis.

Histopathological examination showed slight epidermal atrophy, telangiectasia, pigmentary incontinence and dermal lymphomononuclear infiltration, mainly around blood vessels. Lichenoid characteristics were absent.

Patch tests were performed with the European standard series, and both patch and photopatch tests were carried out with fragrances (Hermal-Trolab) and the after-shave lotion as is. Results are shown in Table 1. Positive photopatch tests, observed only with the after-shave lotion and musk ambrette, were followed by persistent residual pigmentation of these areas. A biopsy, taken 6 months later, showed increased pigmentation of the basal layer.

Facial pigmentation, but without 'flare-ups', still persisted 8 months after ceasing the use of after-shave lotions.

Discussion

In our patient, facial photosensitivity followed, within a few months, the use of a new after-shave lotion containing musk ambrette. This fragrance ingredient of male cosmetics is often reported as a cause of allergic (7) or photoallergic (9, 10) contact dermatitis and sometimes persistent light reaction (9, 10).

Positive photopatch tests with residual pigmentation, analogous to the facial lesions, strongly suggest that musk ambrette present in the after-shave lotion was the etiologic agent of this pigmented photoallergic contact dermatitis. No histological hallmarks of eczema were found in biopsies, but they were taken during non-active periods.

Pigmentation as a manifestation of airborne contact dermatitis from musk ambrette in incense was reported by Hayakawa et al. (7), but patch tests were positive without UVA irradiation and there is no reference to pigmentation of the test sites, as in our case.

Cutaneous pigmentation, due to the presence of melanin in the dermis, may follow an inflammatory reaction from either chemical or mechanical irritation (11) or from contact allergy (12). Occasionally, it may be the only sign of allergic contact dermatitis, as in cases reported by Osmundsen (12). In our case, we consider pigmentation a secondary manifestation of photoallergic contact dermatitis.

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Allergic contact dermatitis from Codivilla's spring

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Key words: allergic contact dermatitis; Codivilla's spring; phenol-formaldehyde resin; para-tertiary butylphenol-formaldehyde resin; orthopedic device; adhesive.

Case Report

In March 1990, a 44-year-old woman presented with eczema of the heel and posterior aspect of her left leg. She had suffered from poliomyelitis since childhood and there was marked muscular hypotrophy of the left leg. Since 1988, she had been using a Codivilla spring (Fig. 1), an orthopedic device used to support swinging feet. Unfortunately, an itchy dermatitis developed where the device touched the skin. When she stopped using the Codivilla spring, her dermatitis resolved, but when she tried to use it again, as she could not do without it, the dermatitis recurred.

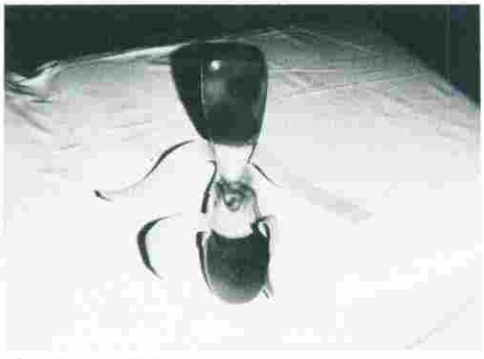

Fig. 1. Codivilla's spring.

Cutaneous examination showed 2 erythemato-vesicular areas in the sural and calcaneal region of the left leg. The lesions had the exact shape of the spring. The patient was patch tested with the GIRDCA standard series. Patch tests with para-tertiary-butylphenol-formaldehyde resin (PTBP-FR) 1% pet. and thimerosal 0.1% pet. were strongly positive (+++) at 2 and 4 days. A patch test with a shaving of the leather covering with some adhesive on it was also strongly positive. The patient was then patch tested with a series of phenol-formaldehyde resins (Table 1): she showed positive reactions to phenol-formaldehyde resin 5% pet. (+++) and to urea-phenol-formaldehyde resin 10% pet. (++), while the other resins remained negative.

Discussion

Codivilla's spring is an orthopedic foot device, made to measure, with a spring inserted in the posterior

Table 1

	D2	D4
p-tert-butylphenol 2% pet.	–	–
phenol-formaldehyde resin 5% pet.	++	+++
toluene sulfonamide-formaldehyde resin 10% pet.	–	–
dimethylolhydroxyethylene urea 10% pet.	–	–
urea-phenol-formaldehyde resin 10% pet.	++	++
hexamethylenetetramine 1% pet.	–	–
resorcin 1% pet.	–	–
resorcinol monobenzoate 1% pet.	–	–
2-monomethylol phenol 1% pet.	–	–