

Short Communications

Allergic contact dermatitis from tertiary-butylhydroquinone (TBHQ) in a vegetable hydraulic oil

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Key words: occupational; allergic contact dermatitis; vegetable oil; antioxidants; tertiary-butylhydroquinone; metal-working fluids; metalworkers; engineering industry. © Munksgaard, 2000.

Tertiary-butylhydroquinone (TBHQ) is an antioxidant used in cosmetics and foods (1). In industry, it is used as a chemical stabilizer and retarder of polymerization of polyesters (2). There are a few reports of contact allergy to cosmetic products (1, 3–5), as well as an occupational case from a vegetable cutting fluid (2). TBHQ is included in the Chemotechnique cosmetics series at 1% pet. Patients with this contact allergy may have simultaneous reactions to other antioxidants, including BHA and BHT (1, 5).

Case Report

A 48-year-old man had been working as a turner for more than 30 years. When young, he had had a skin eruption diagnosed as psoriasis on the elbows and knees. Since 1996, he had dermatitis on the backs of the hands and fingers. In 1997, standard, antimicrobial and oil series of patch tests had been negative. On prick testing, he had reacted to birch and mugwort pollen. During summer, the dermatitis always healed. In autumn 1998, he was put on sick-leave several times and the dermatitis always improved during them.

In 1999, on repeat patch testing, he had strong allergic reactions to Compositae mix, sorbitan sesquileate and

2 products that he had handled in his work, a vegetable hydraulic oil and a vegetable cutting fluid. 5 control patients were negative to these products (10% o.o.). The Swedish producer kindly supplied the ingredients of the 2 products for further patch testing. The patient reacted to 1 ingredient of the hydraulic oil that appeared to be TBHQ, which was positive down to 0.1%. The ingredients of the other product remained negative. The patient was also allergic to BHA, but not to either BHT or hydroquinone.

When the hydraulic oil and the cutting fluid were changed to new products, the dermatitis improved, and the patient was able to continue his work.

Discussion

The relevance of the Compositae mix and sorbitan sesquileate reactions remained unclear, nor was any exposure to BHA found. In accordance with a previous report (5), the apparent cross-sensitivity between BHA and TBHQ did not extend to hydroquinone. The cause of the reaction to the cutting fluid was not found, but since it was also based on vegetable oil, it may also have contained either TBHQ or BHA. This is the 2nd report of contact sensitization to TBHQ in a product based on vegetable oil.

Table 1. Patch test results in 1999

Test substance	D2	D4/5
Compositae mix	+	++
sorbitan sesquileate	++	++
hydraulic oil 10% o.o.	?+	++
hydraulic oil 1% o.o.	?+	?+
cutting fluid 10% o.o.	?+	++
cutting fluid 1% o.o.	–	?+
TBHQ 5% o.o.	+	++
TBHQ 1% o.o.	+	++
TBHQ 0.1 % o.o.	+	++
BHA	+	+
BHT	–	–
hydroquinone	–	–

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Contact allergy to individual fragrance mix constituents in relation to primary site of dermatitis

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Key words: allergic contact dermatitis; perfumes; fragrances; body site; patch testing; cinnamal; cinnamic alcohol; oak moss; isoeugenol; eugenol; hydroxycitronellal; geraniol; α -amyl cinnamal; sorbitan sesquioleate. © Munksgaard, 2000.

In those individuals allergic to the fragrance mix, common sites of dermatitis are the hands, face and axillae (1, 2). There are no published data on the distribution of dermatitis in patients allergic to the *constituents* of the fragrance mix.

Patients and Methods

23,660 patients (14,004 female; 9656 male) were patch tested during the 15-year period between 1 January 1984 and 31 December 1998. Of these, 1811 had positive patch test reactions to the fragrance mix (8% pet.) and 1112 were tested to its constituents (each 1% pet.). At the time of patch testing, the primary site of dermatitis and other relevant data were recorded on our diagnostic database. A retrospective analysis was performed of the

primary site of dermatitis in patients who reacted to the fragrance mix and its constituents.

Results

934 patients (609 F, 325 M) had positive patch test reactions to at least 1 fragrance mix constituent, most commonly oak moss ($n=378$) and isoeugenol ($n=231$). The most frequent sensitizers in females were oak moss ($n=253$, 42%) and isoeugenol ($n=161$, 26%) and in males oak moss ($n=125$, 39%) and eugenol ($n=74$, 23%). The predominant primary sites of dermatitis in females allergic to a fragrance mix constituent were the hands ($n=168$; 28%), face and neck ($n=152$; 25%) and generalized ($n=109$; 18%) (Table 1). In males, the predominant primary sites were also the hands ($n=113$; 35%), face and

Table 1. No. female patients with positive patch tests to a constituent versus primary site of dermatitis

	Cinnam*	Cinn alc*	Oak moss	Isoeugen*	Eugenol	Hydroxy*	Geraniol	A-amyl-c*	Sorb Ses*	All cons*
generalized	17	15	46	33	15	12	4	6	5	109
face/neck	30	22	76	38	17	13	8	5	5	152
axilla	3	1	4	8	3	2	1	1	—	12
anogenital	3	2	2	1	—	—	—	—	—	7
hand	34	26	59	43	27	22	11	6	2	168
leg	5	2	8	8	3	4	2	1	1	22
other	20	13	36	19	13	7	7	1	4	90
unknown	11	9	21	11	7	4	7	4	3	49
total	123	90	253	161	85	64	40	24	20	609

*Cinnam, cinnamal; Cinn alc, cinnamic alcohol; Isoeugen, isoeugenol; Hydroxy, hydroxycitronellal; A-amyl-c, α -amyl-cinnamal; Sorb Ses, sorbitan sesquioleate; All cons, all constituents.

Table 2. No. male patients with positive patch tests to a constituent versus primary site of dermatitis

	Cinnam	Cinn alc*	Oak moss	Isoeugen*	Eugenol	Hydroxy*	Geraniol	A-amyl-c*	Sorb Ses*	All cons*
generalized	8	4	23	7	9	5	5	—	1	43
face/neck	10	7	33	19	17	7	7	3	2	71
axilla	1	1	1	—	—	1	—	—	—	3
anogenital	5	4	4	—	—	1	1	1	2	9
hand	35	21	33	26	32	3	6	1	7	113
leg	—	2	1	2	1	3	3	1	—	10
other	13	9	23	12	9	5	4	1	2	58
unknown	—	1	7	4	6	—	1	—	1	18
total	42	49	125	70	74	25	27	7	15	325

*Cinnam, cinnamal; Cinn alc, cinnamic alcohol; Isoeugen, isoeugenol; Hydroxy, hydroxycitronellal; A-amyl-c, α -amyl-cinnamal; Sorb Ses, sorbitan sesquioleate; All cons, all constituents.

neck ($n=71$; 22%) and generalized ($n=43$; 13%) (Table 2). The axillae accounted for 2% of primary sites in females and 0.9% in males. The anogenital region was the primary site in 1.1% of females and 2.8% of males. This distribution of primary sites was similar to that of all patients allergic to the fragrance mix (Table 3).

8 of the 15 individuals of either sex (53%) with the axillae as the primary site of dermatitis had positive patch tests to isoeugenol, compared to 231 (25%) of 934 patients with positive patch tests to at least 1 fragrance mix constituent ($p=0.015$; Fisher's exact test). 8 of 16 patients (50%) with the anogenital region as the primary site of dermatitis had positive patch tests to cinnamal, compared to 195 (20.8%) of 934 patients with positive patch tests to at least 1 fragrance mix constituent ($p=0.009$). 6 of 16 patients (37.5%) with the anogenital region as the primary site of dermatitis had positive patch tests to cinnamic alcohol, compared to 139 (14.8%) of 934 patients with positive patch tests to at least 1 fragrance mix constituent ($p=0.02$). There were no other significant associations between site and individual fragrance substances.

Discussion

The predominance of the hands as the primary site of dermatitis in those allergic to fragrance may reflect sensitization via previously-irritated skin, due to its diminished barrier function (3). Soaps, detergents and shampoos, with which the hands have frequent contact, may contain fragrances (3, 4). Perfumed skin-care products, such as barrier creams and emollients, are responsible for a higher proportion of cosmetic reactions than neat perfume or eau de toilette (4). It is, however, possible that, at the time of patch testing, some patients with hand dermatitis may fail to recall previous sensitization to fragrance via another route, such as a deodorant used in the axilla.

Table 3. No. patients allergic to the fragrance mix with dermatitis at each primary site

	Females	Males
face/neck	316 (26.6%)	112 (17.9%)
hands	299 (25.2%)	208 (33.3%)
generalized	225 (19%)	85 (13.6%)
hand/face	55 (4.6%)	41 (6.6%)
leg	36 (3%)	31 (5%)
anogenital	29 (2.4%)	23 (3.7%)
hand/foot	28	23
trunk	22	8
arms	19	17
axilla	18 (1.5%)	5 (0.8%)
foot	17	19
flexures	14	2
ear	11	4
scalp	7	5
groin	3	3
unknown	87	39
total	1186	625

The distribution of dermatitis in our fragrance-allergic patients is similar to that in other studies, where the most commonly involved sites were the hands and face (1, 5–9). The axilla was the affected site in 1–13% of patients in studies where site was reported in detail (5–7) and the anogenital area in 0–2.4% (5–9). Fragrance mix and Myroxylon Pereirae are well-recognized as allergens in patients with vulval dermatoses (10). The increased frequency of cinnamal and cinnamic alcohol allergy in those with anogenital dermatitis may reflect their presence in Myroxylon Pereirae, and thus in Anusol® haemorrhoidal cream, a common cause of medication allergy.

Allergy to isoeugenol was more frequent than expected in our cases of primary fragrance sensitization in the axilla, consistent with its regular presence in deodorants (11). It was also present in 70% of popular 'prestige' perfumes sold in the US and Europe in 1991–2 (12). In May 1998, the International Fragrance Association (IFRA) reduced the maximum recommended level for isoeugenol in consumer products to 0.02% (200 ppm), which may reduce the frequency of sensitization to this important allergen.

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Persistent telangiectasia following patch testing with topical corticosteroids

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Key words: patch testing; side-effects; topical corticosteroids; medicaments; telangiectasia. © Munksgaard, 2000.

Case Report

A 44-year-old lecturer in nursing, with interstitial cystitis and past anaphylaxis to bee stings, was referred for allergy testing. She had a history of asthma and dermographism, improved by the leukotriene-antagonist montelukast. Her other medication comprised oxerutins, an oestrogen implant for polycystic ovary syndrome, diclofenac, omeprazole, hydroxyzine and inhalers of beclomethasone, salbutamol and salmeterol.

In May 1999, she was patch tested to a standard and bakery series with no positive reactions. Touch tests produced immediate erythema with the food-related flavours and preservatives cinnamic alcohol, cinnamal, sorbic acid, benzoic acid and propionic acid.

Her total IgE was 5520 kU/l (normal 1–120 kU/l) with weak grade 1 reactions to grass and common food mix, together with wheat and peanut, and a grade 2 reaction to house dust mite. These were thought to be indicative of atopic status. She commenced a diet free of the above-mentioned flavours, additives and also wheat. Her interstitial cystitis improved, possibly also because of a course of systemic prednisolone prescribed for idiopathic thrombocytopenic purpura in July 1999. However, a challenge with wheat later on reproduced her symptoms.

In September 1999, she presented with a well-circumscribed patch of hyperpigmentation and telangiectasia without atrophy on her back in the shape of a patch-testing chamber. This was in the position of the previous application of various topical corticosteroids as part of our standard series: tixocortol pivalate 1% and 0.001% in petrolatum (pet.), budesonide 1% and 0.001% in ethanol (eth.), betamethasone valerate 1% eth., clobetasol propionate 1% eth. and clobetasone butyrate 1% eth.

1 month later, she was found to have membranous glomerulonephritis.

At follow-up 1 year after patch testing, although the hyperpigmentation had faded, the patch of telangiectasia persisted. The individual ectatic vessels were traced with a frequency-doubled neodymium YAG laser (wavelength 532 nm, 2 mm spot, fluence of 11 J/cm², pulse width 20 ms) with a good therapeutic result.

Discussion

In our patient, there were no positive reactions to patch testing at day 2 or 4 and no suggestion of delayed sensitization. Instead, hyperpigmentation and telangiectasia in the shape of a patch-testing chamber developed with several months delay. Because of this delay in presentation, we were unable to determine which topical corticosteroid caused the reaction. Re-testing was not performed, as an irritant or toxic effect might not have been reproducible. In view of the persistent side-effect, re-testing also did not seem ethical.

The hyperpigmentation may be explained as post-inflammatory, even in the absence of any clinically detectable inflammation. However, topical corticosteroids cause melanocyte inhibition and therefore hypo- rather than hyperpigmentation (1).

To our knowledge, persistent telangiectasia has not previously been described as a side-effect of patch testing. Topical corticosteroids are known to have cutaneous vascular effects. An initial vasoconstriction is followed by rebound vasodilatation, which may become fixed (2). This is unusual following the 1st application and in the absence of any other side-effects such as atrophy. Unwanted corticosteroid effects are more common when they are used for a prolonged period of time and, as during patch testing, under occlusion and in high concentrations.

Our patient had a multitude of ongoing medical problems, including asthma, interstitial cystitis, idiopathic thrombocytopenic purpura and membranous glomerulonephritis, requiring a variety of medication. However, none of these would explain the unusual reaction following patch testing.

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Positive lesional patch tests in fixed drug eruptions from nimesulide

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Key words: fixed drug eruption; adverse drug reaction; positive lesional patch test; nimesulide; non-steroidal anti-inflammatory drug (NSAID); medicaments. © Munksgaard, 2000.

Case reports

A 21-year-old woman was observed with 2, 3-cm rounded pigmented macules in the supra-clavicular area, which repeatedly became pruritic, with erythema and oedema, after oral intake of nimesulide for dysmenorrhoea. A 32-year-old woman, was observed with 2 erythematous-violaceous pruritic patches, with central flaccid bullae, localized on the dorsum of both feet. Lesions developed within 24 h of nimesulide intake, prescribed for arthralgia, and regressed with residual macular brown pigmentation. A 39-year-old man presented with multiple erythematous oedematous rounded lesions (2 to 4 cm in diameter), localized on the forearms, axillae, trunk and penis, with blistering at the last site. Lesions developed on the 3rd day of oral therapy with nimesulide and amoxycillin, prescribed for suppurative otitis, and cleared with residual hyperpigmentation.

All 3 patients were patch tested, 6 to 8 weeks after the acute episode. On normal back skin, the GPEDC standard series, and an NSAIDs series, including nimesulide 5 and 10% pet., as well as an antibiotics series in the male patient, were negative. On residual pigmented FDE lesions, nimesulide (99.5% pure drug kindly supplied by Rhône-Poulenc-Rorer) 5 and 10% pet. was positive at both dilutions by D1, with increased intensity by D2 (++/+ + +). Patch testing with amoxycillin 5% pet. on a residual FDE lesion in the male patient was negative.

No more flares were observed after nimesulide was withdrawn.

Discussion

Nimesulide (1) has been marketed in several European countries since 1984, and in Portugal since 1986,

where it is currently the best-selling NSAID (2). In NSAID-sensitive patients, nimesulide can be a safe alternative (3). Only 3 cases of FDE from nimesulide have previously been published (4, 5). Patch testing on residual lesions of FDE has previously been shown to be positive with several other NSAIDs, including fenazone salicylate (antipyrine), feprazone (6,7) and piroxicam (8).

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Contact dermatitis from 'ecological' textile dyes

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Key words: Oeko-Tex Standard 100®; textile dyes; azo dyes; disperse dyes; allergic contact dermatitis; cross-sensitivity; p-phenylenediamine; Disperse Blue 106; Disperse Blue 124; clothing. © Munksgaard, 2000.

Case Report

A 63-year-old woman presented with itchy dermatitis on her hands, forearms and neck, after wearing a dark-blue

coat with a dark-blue lining. Similar skin changes had occurred years ago, after wearing a dress also with a dark-blue lining. Patch testing was positive at D3 to p-phenylenediamine 1% pet. (+), Disperse Blue 106

(+++) and Disperse Blue 124 (+++). The lining of the coat was strongly positive by D2.

We were able to trace the producers of the dyes, from whom we obtained 3 basic disperse dyes (blue, red and yellow) used according to Oeko-Tex Standard 100® (1). Patch testing with these dyes showed positive (++) reactions to the red (0.1% and 1% pet.) and blue (0.1% and 1% pet.) dyes, but not the yellow (0.1% and 1% pet.). The same patch tests were negative in 5 healthy non-atopic individuals.

Oeko-Tex Standard 100® is a well-known textile label, the aim of which is to assure high-quality textiles, i.e., textiles with 'skin-friendly' pH, analyzed for their content of formaldehyde, pesticides, pentachlorophenol, heavy metals, chloride-organic carriers, and carcinogenic or sensitizing dyes. They may be promoted as 'allergen-free'. The list of sensitizing dyes comprises: Disperse Blue 1, 3, 7, 26, 35, 102, 106, 124, Disperse Orange 1, 3, 37, 76, Disperse Red 1, 11, 17 and Disperse Yellow 1, 3, 9, 39, 49.

The blue and red dyes patch tested in our patient with positive results were analyzed by a Swiss textile testing institute (Testex, Zürich), using high-pressure liquid chromatography (HPLC), indicating that the Oeko-Tex Standard 100® was fulfilled by the absence of the above-mentioned dyes. Material safety data sheets indicated that the blue and the red textile dyes were a mixture of disperse azo dyes. The individual components of the mixtures of disperse azo dyes were not provided by the manufacturers, despite repeated requests.

Discussion

We demonstrate that classification of textile dyes according to Oeko-Tex Standard 100® does not necessarily pre-

vent the development of allergic contact dermatitis. Textile dye sensitizations have an estimated frequency of 1.4% to 5.8% (2) and are, in many instances, due to disperse dyes of anthraquinone or azo structure, e.g., Disperse Blue 106 and Disperse Blue 124, thioazolazoyl-phenylenediamine dyes. Cross-reaction between Disperse Blue 106 and Disperse Blue 124 is well-known (3, 4), as well as multiple azo disperse dye sensitization (5) and cross-sensitization between azo dyes and para-amino compounds (6). Contact dermatitis from Disperse Black 1 and 2 is also well-known (7, 8).

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Eyelid dermatitis from benzophenone used in nail enhancement

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Key words: benzophenone-3; benzophenone-4; light absorbers; nail enhancement; eyelid dermatitis; cosmetics; protein contact dermatitis; allergic contact dermatitis; cornstarch; natural rubber latex; chicken. © Munksgaard, 2000.

Case Report

A 33-year-old woman presented with eyelid dermatitis for 1 year and facial dermatitis for the past 2 months. She worked 5 days a week in a chicken-processing plant, where she handled the raw meat using powdered latex gloves to protect her hands. She had very long, lacquered nails, achieved by a nail overlay. This comprised a "liquid and powder" applied to the natural nail plates, which were themselves quite long. Applied methacrylate was cured under UV light, and the finished nails were then lacquered in 3 layers. She had flared on weekends, and her nails were applied on alternate Saturdays. Physi-

cal examination showed lichenification of the upper eyelids bilaterally, with less severe involvement of the lower lids. There was a streak of eczema along the medial aspect of the right lower lid.

On prick testing, she showed a + reaction to chicken and natural rubber latex and a ++ reaction to cornstarch. Patch testing to nail acrylates (Chemotechnique), 2-ethyl cyanoacrylate (dried on adhesive plaster), tosylamide/formaldehyde resin (10% pet., Chemotechnique) and her nail lacquers (open, as is), was negative. Patch testing to benzophenone-3, and -4 was positive (++ and +, respectively), while a patch test to benzophenone-10 was negative.

At her initial visit, the patient was asked to avoid all applications and to wear eyeglasses during the day and to apply a blindfold at bedtime to avoid inadvertent hand transfer. She did this and was clear by the 2nd patch test reading.

Comment

Nail enhancement includes overlays, sculpturing, wraps, photobonding, gel nails, no-light gel procedures and artificial nail tips of many types (1-3). Methylacrylates are commonly recognized, on history, as a "liquid and powder" (3), while cyanoacrylates are detected as rapidly curing gels or adhesives (sometimes with a spray-on added for more rapid polymerization). The gel oligomers used for "gel nails" generally require UV-light curing. While testing with the Chemotechnique nail methacrylate series and 2-ethyl cyanoacrylate will usually detect sensitivities to those products, there are exceptions, as the present case illustrates.

Nail overlays are little different from sculptured nails, except that the former are applied only over the nail surface while the latter extend the length of the nails. The use of UV light for curing allows the nail technician to finish her work before the methacrylate hardens, so that the procedure is not hurried. In the US, the UV

sources allowable in salons are weak, so a light absorber is often added to the formula to speed the process, and a benzophenone is probably typical (2).

My patient was not allergic to the methacrylate content (4) or to her nail lacquer, but only to the light absorber. She also possibly had protein contact dermatitis from glove powder and, to a lesser degree, latex and chicken. Protein contact dermatitis can certainly be a source of even severe eyelid dermatitis, but the timing of flares paralleled exposure to the nail product. As with many patients with allergic contact dermatitis of the eyelids, multiple factors may have played a rôle. Clearly, light absorbers should be added to the test series when UV-curing has been used.

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Protein contact dermatitis from pecan

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Key words: protein contact dermatitis; pecan; nuts; foods. © Munksgaard, 2000.

Case Report

A 52-year-old woman, who worked as a chicken farmer, presented with hand eczema comprising deep-seated vesicles. She had originally noticed this some 25 years previously and found that it accompanied vesiculation in the arch of her feet. She also had an erythematous and hyperkeratotic eruption in frictional areas that tended to fissure during winter months. The vesicular eruption of the feet was not present at the initial visit. An intradermal trichophyton test was applied at this initial visit and read at 72 h as a ++ positive reaction. Patch testing showed a +++ reaction to nickel sulfate (5% pet., Chemotechnique) and a ++ reaction to betamethasone dipropionate cream, which she had been applying.

After patch testing to a series of topical corticosteroids and intradermal testing (to hydrocortisone hemi-succinate, 1 mg in 0.5 ml), the patient was given clobetasol propionate spray, a topical corticosteroid to which she was patch test negative, and she was started on a low nickel diet (1). She was initially markedly improved, but flared severely, with multiple new vesicles over the palmar surfaces bilaterally, when she awoke the morning after shelling a large number of pecan nuts. Prick testing to pecan (kernel) was ++ positive, and the

patient's hands rapidly improved after withdrawal from contact. There was never any urticaria. Because of the initial rapid improvement on the low-nickel diet, and because of a prominent flare after eating a large number of crayfish, oral disulfiram 125 mg 2× daily was added. This patient had an endogenous eczema, psoriasis and allergic (protein) contact dermatitis.

Comment

Pecan does not appear to have been reported before as a cause of protein contact dermatitis, the prevalence of which seems to parallel the effort made to look for it (2-6). Many are easily found because exposure is intermittent. In some cases, the cause may not be so easily suspected. The rapid onset helps in the patient's suspecting the cause. We shall probably see many such foods cause eczema in the future (7), and these antigens, often overlooked in the past, will likely assume much greater importance as we gain more experience with them.

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Contact allergy due to propineb

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Key words: contact allergy; propineb; agricultural chemicals; pesticides; dithiocarbamates; occupational; farming.
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Case Report

A 56-year-old Japanese farmer had had recurrent dermatitis on the face and dorsa of the hands for 5 years. He planted pears and sprayed Antracol®, containing propineb, as insecticide. He had a history of allergic contact dermatitis due to rubber boots 7 years ago. At that time, he showed positive reactions to N-isopropyl-N'-phenyl-p-phenylenediamine (IPPD), N-1,3-dimethylbutyl-N'-phenyl-p-phenylenediamine (DMBPPD), 6-ethoxy-2,2,4-trimethyl-1,2-dihydroquinoline (ETMDQ) and black rubber mix, but was negative to the following accelerators of the dithiocarbamate group, zinc dimethyldithiocarbamate, zinc diethyldithiocarbamate, zinc dibutyldithiocar-

bamate, zinc ethylphenyldithiocarbamate, and zinc pentamethylenedithiocarbamate, on patch testing.

Patch tests were conducted with propineb at 0.05%, 0.1%, 0.2%, 0.5%, 1.0% and 2.0% pet. Positive reactions were noted to propineb at 0.2–2% pet. at D2 and at 1–2% pet. at D3 (Table 1). In 10 controls, patch test results were all negative to propineb at 0.5, 0.2 and 1% pet. Based on these results, the dermatitis was concluded to be allergic contact dermatitis due to propineb.

Discussion

Antracol® is an agricultural chemical of the dithiocarbamate group, containing 70% propineb (Fig. 1). Farmers spray this agent on apples, pears, Japanese persimmons and the like, in 500× dilution, as an insecticide.

Jung et al. (1) reported 20 cases of contact dermatitis due to pesticide, among which there was 1 case with a positive patch test reaction to propineb, as well as positive reactions to metham Na, zineb and maneb. Koch (2) reported a case of occupational contact dermatitis due to mancozeb and another to dithiocarbamate fungicide. A positive reaction to propineb as a cross-reaction was noted.

Cross-reactions to accelerators of the dithiocarbamate group in rubber were not found in the present case.

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Table 1. Patch test results

Materials	(%)	Vehicle	D2	D3
propineb	0.05	pet.	?+	?+
propineb	0.1	pet.	?+	?+
propineb	0.2	pet.	+	?+
propineb	0.5	pet.	+	?+
propineb	1.0	pet.	+	+
propineb	2.0	pet.	+	+
control (pet.)	as is	—	—	—

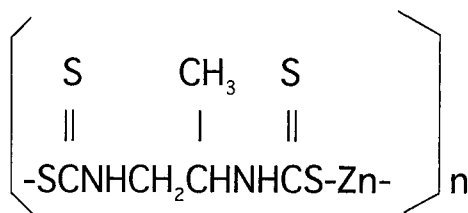


Fig. 1. Chemical structure of propineb.

Sensitizers commonly causing allergic contact dermatitis from cosmetics

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Key words: cosmetics; allergic contact dermatitis; patch test; fragrance; preservatives; para-phenylenediamine; nickel; hair dye; atopy. © Munksgaard, 2000.

There was no standard patch test series available in India until recently (1), but efforts are underway to market such a series approved by the Contact and Occupational Dermatoses Forum of India (CODFI) (2).

Materials and Methods

50 consecutive patients with suspected cosmetic dermatitis were patch tested with a cosmetic and fragrance series and selected allergens from the Indian standard series (ISS) (Systopic Laboratories Ltd., New Delhi, India) (Table 1). Suspected cosmetics were also patch tested 'as is' or in standard dilutions. Patch testing was carried out on the upper back using aluminium chambers, mounted on Micropore, by standard methods, making ICDRG gradings (3) on day (D) 2 and D4. Only reactions still positive at D4 were considered positive.

Results

Of 436 patients attending our contact dermatitis clinic during the study period, 50 (11.4%) were suspected of having cosmetic dermatitis. Of these 50 patients, 35 (70%) were female and 15 (30%) male, with a mean age of 41.8 (range 15–73) years. In 38 (76%) patients, the dermatitis had been present for 1 year or less. Localized dermatitis of the forehead and scalp margin was the commonest pattern, seen in 20 (40%) patients, followed by the face in 16 (32%), eyelids/periorbital region in 12 (24%), scalp in 10 (20%), neck in 6 (12%), and lips in 3 (6%) patients. A personal history of atopy was present in 12 (24%) patients, and a family history of atopy in 13 (26%).

Among the cosmetics suspected were hair dyes in 31, followed by face creams in 7, and lipsticks, eye cosmetics, nail cosmetics and bindi in 3 each. 34 (68%) patients were positive to 1 or more allergens, of whom 23 (46%) were female and 11 (22%) male. The most common allergen was fragrance, in 47%, followed by preservatives in 29.4%, and para-phenylenediamine (PPD) and nickel in 23.5% each (Table 2). In men, the most common sensitizers were PPD (5), cetrimide and fragrance (4 each). The most frequent sensitizers in women were fragrance (12), preservatives (9) and nickel (7).

Discussion

The reported frequency of sensitization to cosmetics ranges from 2.2% to 4.4% in various countries (4–6). In 1 study, 5.4% of patients were positive to cosmetics (7). In our study, we were able to confirm the diagnosis of

contact dermatitis from cosmetics in 34 (68%) of the 50 patients in whom it was suspected, by patch tests either to ingredients or the products themselves. A similar sex distribution to our study has been observed previously

Table 1. Patch test allergens: 1–28 cosmetic and fragrance series; 29–45 selected from Indian standard series

Allergens	(%)	Vehicle
1. benzyl alcohol	1	pet.
2. benzyl salicylate	2	pet.
3. 2-bromo-2-nitropropane-1,3-diol	0.25	pet.
4. BHA	2	pet.
5. BHT	2	pet.
6. cetyl alcohol	5	pet.
7. chloroxylenol	0.5	pet.
8. propyl gallate	1	pet.
9. Geranium (oil)	2	pet.
10. imidazolidinyl urea	2	aq.
11. isopropyl myristate	20	pet.
12. Jasminum officinale	2	pet.
13. Lavandula angustifolia	2	pet.
14. musk mix	5	pet.
15. polysorbate 80	2	pet.
16. Rosa (oil)	2	pet.
17. sorbic acid	2	pet.
18. sorbitan oleate	2	pet.
19. sorbitan sesquioleate	2	pet.
20. stearyl alcohol	30	pet.
21. tert-butyl hydroquinone	1	pet.
22. thimerosal	0.1	pet.
23. triclosan	2	pet.
24. trimethanolamine	2	pet.
25. vanillin	10	pet.
26. cetrimide	0.5	pet.
27. jasmine synthetic	2	pet.
28. hexamine	2	pet.
29. potassium dichromate	0.5	pet.
30. cobalt chloride	1	pet.
31. formaldehyde	1	pet.
32. 4-phenylenediamine (PPD) base	0.1	pet.
33. parabens	15	pet.
34. nickel sulfate	5	pet.
35. colophonium	20	pet.
36. propylene glycol	2	pet.
37. epoxy resin	1	pet.
38. fragrance mix	8	pet.
39. chlorocresol	1	pet.
40. lanolin (wool wax alcohols)	30	pet.
41. Myroxylon Pereirae (balsam of Peru)	25	pet.
42. methylchloroisothiazolinone/ methylisothiazolinone	0.67	aq.
43. p-tert-butylphenol-formaldehyde (PTBPF) resin	1	pet.
44. quaternium-15	1	pet.
45. eosin	50	pet.

Table 2. Patch test positivity

Allergen	Total +ve	(%)	No. patients with positive patch tests					
			hair dyes (n=20)	face cream (n=6)	nail polish (n=1)	lipstick (n=3)	eye liner (n=2)	bindi (n=2)
(i) <i>Fragrance/perfume components</i>	16	(47)	8	4	1	1	2	
fragrance mix	3		2	1	—	—	—	—
musk mix	1		—	—	—	—	1	—
jasmine synthetic	1		—	—	—	—	1	—
benzyl salicylate	1		1	—	—	—	—	—
vanillin	1		1	—	—	—	—	—
Rosa (oil)	1		—	1	—	—	—	—
Geranium (oil)	3		1	1	1	—	—	—
Jasminum officinale	1		—	1	—	—	—	—
Myroxylon Pereirae	4		3	—	—	1	—	—
(ii) <i>Preservatives</i>	10	(29.4)	3	4	1	1	1	—
chloroxylenol	1		1	—	—	—	—	—
propyl gallate	1		—	1	—	—	—	—
thimerosal	1		—	1	—	—	—	—
formaldehyde	2		—	—	1	—	1	—
parabens	1		—	1	—	—	—	—
propylene glycol	1		1	—	—	—	—	—
methylchloroisothiazolinone/methylisothiazolinone	1		—	—	—	1	—	—
quaternium-15	2		1	1	—	—	—	—
(iii) <i>PPD base 1%</i>	8	(23.5)	8	—	—	—	—	—
(iv) <i>nickel sulfate</i>	8	(23.5)	3	1	—	1	1	2
(v) <i>cetrimide</i>	6	(17.6)	5	—	1	—	—	—
(vi) <i>pot. dichromate</i>	6	(17.6)	2	2	—	—	1	1
(vii) <i>PTBPF resin</i>	5	(14.7)	2	1	1	—	—	1
(viii) <i>tert-butyl hydroquinone</i>	3	(8.8)	3	—	—	—	—	—
(ix) <i>colophonium</i>	3	(8.8)	2	—	—	1	—	—
(x) <i>eosin</i>	3	(8.8)	—	—	—	3	—	—
(xi) <i>chlorocresol</i>	2		1	1	—	—	—	—
(xii) <i>cobalt chloride</i>	1		—	1	—	—	—	—
(xiii) <i>stearyl alcohol</i>	1		—	1	—	—	—	—

(7–9). In our study, the majority of the patients were aged 31–40 years, whereas in a previous study from India, most patients were aged 21–30 years (10). 24% of our patients had a personal history of atopy, a slightly higher figure than in previous studies (11–13).

Fragrance has often been reported as the commonest allergen in cosmetics, followed by preservatives (4, 6, 7, 9, 12, 14), and fragrance (47%) was the most common allergen in our study also, with preservatives (29.4%) (15), nickel and PPD (23.5% each) being the next most common. Sensitivity to nickel was present in 23.5% of our patients, in accordance with De Groot et al. (9). Nose or ear piercing remains a common practice in India. Positive reactions to PPD in 23.5% of patients were observed only in those with hair dye dermatitis.

Potassium dichromate and cetrimide each elicited positive readings in 17.6% of our patients. 1 out of the 3 cases tested for eye cosmetics (16) in our series reacted to chromate, but this is the commonest allergen in our region anyway (2). Cetrimide is an antiseptic that might be used in cosmetics (17). PTBPF resin (18), positive in 15% of our patients, is a known allergen in bindi users (19). Tert-butyl hydroquinone, eosin and colophonium were each positive in 8.8% of our patients. Tert-butyl hydroquinone (5) is an antioxidant in lipsticks, but was also positive in hair dye users. The use of eosin in lipsticks, though rare nowadays, is still not completely

eliminated, as witnessed by 3 of our patients with lipstick dermatitis. Allergic contact dermatitis due to colophonium in mascara, eye shadows, rouge and lipstick has previously been reported (16, 20, 21).

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Preliminary experience with a new “Mediterranean” Compositae mix

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Key words: Compositae; Compositae mix; sesquiterpene lactone mix; plants; plant extracts; allergic contact dermatitis; patch testing technique; *Helianthus annuus*; *Tagetes minuta*; sunflower; marigold. © Munksgaard, 2000.

To investigate Compositae dermatitis, 2 mixes are usually used: sesquiterpene lactone (SL) mix (alantolactone 0.33%, dehydrocostuslactone 0.33%, costunolide 0.33%) and Compositae mix (*Achillea millefolium* 1%, *Arnica montana* 0.5%, *Chamomilla recutita* 2.5%, *Tanacetum parthenium* 1%, *Tanacetum vulgare* 1%), the latter being more sensitive than the former (1). In the

Compositae mix, besides SLs, there are polyenes (polyacetylenes, thiophenes) (2, 3) that may also sensitize (4). However, the marketed Compositae mix is perhaps a better screen for northern European patients than southern, because it does not reflect the Compositae flora in the Mediterranean area. For this reason, we have developed a new Compositae mix containing *Helianthus*

Table 1. Botanical and common names, main antigens and patch test concentrations of the 5 species used in the new Compositae mix

Botanical name	Common name	Main antigens	% pet.
<i>Achillea millefolium</i>	yarrow	α -peroxyachifolide (SL)	1
<i>Chamomilla recutita</i>	German chamomile	desacetylmatricarin (SL)	2.5
<i>Helianthus annuus</i>	sunflower	dihydroniveusin A (SL)	1
<i>Tagetes minuta</i>	marigold	polyenes (PT)	1
<i>Tanacetum parthenium</i>	feverfew	parthenolide (SL)	1

SL: sesquiterpene lactone; PT: polyacetylenes, thiophenes.

Table 2. Patch test results (D2/D4) with the new and old Compositae mix in 536 consecutive (case nos. 1–2) and in 4 selected (case nos. 3–6) patients

	Case no. 1	Case no. 2	Case no. 3	Case no. 4	Case no. 5	Case no. 6
new Compositae mix	+++	++	++	+++	++	++
old Compositae mix	+++	++	++	+++	+++	++
SL mix	+++	–	++	+++	++	++

annuus and *Tagetes minuta* in place of *Arnica montana* and *Tanacetum vulgare*.

Patients and Methods

536 consecutive patients (182 male, 354 female, mean age 38.6 years), between February 1998 and December 1998, were patch tested according to GIRDCA criteria (5) with the marketed Compositae mix (distributed by Firma Diagent, Firenze, Italy) and with the new Compositae mix. This was prepared by us from ether extracts of the following plants: yarrow (*Achillea millefolium*), German chamomile (*Chamomilla recutita*), sunflower (*Helianthus annuus*), marigold (*Tagetes minuta*) and feverfew (*Tanacetum parthenium*). Fresh plants were collected in the surrounds of Perugia and identified by the Department of Plant Biology of the University of Perugia. Ether extracts were made from finely chopped leaves, flowers and stems, according to Bleumink et al. (6), the final solutions being diluted in pet. as listed in Table 1.

Patients with a positive reaction to at least 1 Compositae mix were subsequently patch tested with the SL mix (Chemotechnique Diagnostics, Malmö, Sweden). Finally, 4 selected patients, already known to be Compositae-sensitive were patch tested with the new Compositae mix and the SL mix.

Results and Discussion

Positive reactions to the new and old Compositae mix were observed in only 2 of the 536 consecutive patients patch tested (Table 2). One of these was a 44-year-old male recreational gardener and the other a 22-year-old female farmer (case nos. 1 and 2). There were no irritant reactions or active sensitizations. Among the selected patients, differences between new and old mix were not found (case nos. 3–6) (Table 2).

The new Compositae mix seems to be both sensitive and specific. Certain considerations support its usefulness: (i) of the 2 eliminated plants (*Arnica montana* and *Tanacetum vulgare*), the 1st is present in few Italian areas, though *tincture* of arnica is used in cosmetics and medicaments, and the 2nd is both less widely cultivated and found in the wild, and less utilized in herbal medicine than *Tanacetum parthenium*, both being rich in parthenolide, the most sensitizing SL (7); (ii) *Helianthus annuus* is commonly grown in the Mediterranean area as a food crop, especially for

its seed oil used in culinary dressing and cooking, and occupational contact dermatitis from sunflower among farmers is frequent (8), which may be due to easy airborne transport of leaf allergens by the wind during harvesting (9); (iii) *Tagetes minuta* is a common ornamental pot and garden plant containing polyacetylenes and thiophenes, which, present only as traces in the old Compositae mix (2), may however be responsible for Compositae dermatitis, particularly in subjects with positive Compositae mix patch tests but negative SL mix patch tests (10). Therefore, the presence of *Tagetes minuta* and *Helianthus annuus* in the new Compositae mix increases the content of polyenes and may increase the sensitivity of the mixture.

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Photoallergic contact dermatitis from piketoprofen

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Key words: piketoprofen; photoallergic contact dermatitis; medicaments; non-steroidal anti-inflammatory drugs; lack of cross-sensitivity. © Munksgaard, 2000.

Case Report

A 46-year-old man, with a previous history of rosacea, presented in the summer with an acute eczema on the back of his neck, which had developed 3 days after applying a local anti-inflammatory gel (Calmatel[®]) 2× a day. The lesions cleared within 7 days of stopping the gel and applying a topical corticosteroid.

Patch testing with the GEIDC standard series and the gel as is was negative. Subsequently, photopatch testing with a photoallergen series and Calmatel[®] gel as is was carried out with 5 J/cm² UVA irradiation. The gel was positive at both 1 and 2 days. Further patch and photopatch testing with the constituents of Calmatel[®] gel supplied by the manufacturer, piketoprofen, hydroxypropylcellulose, ethyl alcohol, propylene glycol and lavender

oil, was positive only to piketoprofen (Table 1). Testing with piketoprofen in 10 healthy controls was negative. Patch and photopatch testing with ketoprofen 1%, indomethacin 1%, 5% and 10%, paracetamol 1%, 5% and 10%, salicylic acid 1% and 5%, benzydamine hydrochloride 3% and 5%, bufexamac 5%, naproxen 5%, ibuprofen 5%, phenylbutazone 1%, fepradinol 1%, thiosalicylic acid 0.1%, diclofenac, 1%, 5% and 10% and piroxicam 1% (all pet.), were negative.

Discussion

Piketoprofen, or *m*-benzoyl-N-(4-methyl-2-pyridyl)hydrotropamide, is a non-steroidal anti-inflammatory drug of the arylpropionic acid group, which is available in Spain as aerosol, cream and gel for topical use. To the best of our knowledge, a single case of allergic contact dermatitis due to piketoprofen has already been reported (1), and none of photoallergic contact dermatitis. No cross-reaction with other non-steroidal anti-inflammatories, including arylpropionic acid derivatives, was found. 8 patients with photoallergy due to piketoprofen were observed by Ortiz de Frutos and Alomar (Third Latin Meeting of Allergic Contact Dermatitis, unpublished communication) among 153 patients studied in 2 Spanish hospitals during 1985–1996.

References

1. Navarro L A, Jorro G, Morales C, Peláez A. Allergic contact dermatitis due to piketoprofen. *Contact Dermatitis* 1995; 32: 181.

Table 1. Results of patch and photopatch testing

Allergens	% vehicle	Patch test		Photo-patch test	
		D2	D4	D1	D2
standard series		—	—	—	—
Calmatel [®] gel	as is	—	—	++	++
piketoprofen	1% pet.	—	—	+	++
piketoprofen	2% pet.	—	—	+	++
piketoprofen	1% eth.	—	—	+	++
piketoprofen	2% eth.	—	—	++	++
piketoprofen	5% eth.	—	—	++	++
other constituents of Calmatel [®] gel		—	—	—	—
anti-inflammatory series		—	—	—	—