

References

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Patch testing with maleopimaric acid in an occupational dermatology clinic

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Allergy to modified rosin (colophony) may be overlooked when patch testing is performed only with unmodified rosin (1–3). Maleopimaric acid (MPA) (Fig. 1) is a potent allergen of modified rosin (1–3).

Patients and Methods

205 consecutive patients referred for further investigation of suspected occupational dermatitis were patch tested with a modified European standard series containing colophony (20% pet., Chemotechnique Diagnostics AB, Malmö, Sweden). The patients were also patch tested with other relevant series and allergens, as well as MPA. MPA was synthesized as previously described (1, 2). The previously established patch test concentration of 1.2% (pet.) was used (3). Patch testing (2-day occlusion), reading (on days (D) 2, 3, and 4 or 6) and scoring were according to the recommendations of the ICDRG.

Case Report and Results

1 of the 205 patients (0.5%) had an allergic patch test reaction to MPA and 11 (5.4%) had an allergic patch test reaction to colophony. Of those reacting to colophony, 3 had a +++, 5 a ++ and 3 a + reaction. 5 had reactions that were considered irritant (IR) or doubtful (?+). None of those reacting to colophony also had an allergic reaction to MPA.

The patient with an allergic patch test reaction to MPA was a 51-year-old non-atopic sales manager of new and used cars. He had been patch tested 25 years ago and found to have occupational allergic contact dermatitis from diglycidyl ether of bisphenol A epoxy resin (DGEBA-ER). Styrene and polyester had also given allergic patch test reactions. He had had severe edema of the eyelids and angio-edema from occupational exposure to plastics. At that time, he had been occupationally exposed to polyester and epoxy resins, hardeners and styrene in a plastics factory. His symptoms had started after

6 months of such work. He was advised to change jobs, and started work as salesman selling spare parts for cars and other machines, later cars, and for 9 years had been a sales manager. Accordingly, he had some exposure to car waxes. Currently, he had symptoms of the upper respiratory tract: recurrent sinusitis 6–7× per year with continuous aching in between, and work-related edema of the eyelids and erythema of the face. After 3 to 4 days away from work, he was symptomless. He had been referred to us by an ear, nose and throat specialist.

Patch testing was performed with a modified European standard series, an epoxy resin series (4), a rubber chemicals series (5), 50 plastics and glues allergens (6), and a formaldehyde resin series. Allergic patch test reactions were elicited by DGEBA-ER (+++), brominated DGEBA-ER (++), BIS-GMA (++), epoxy diacrylate (++) and MPA (+). Prick tests to 22 environmental allergens, molds, diisocyanates and polyesters (7) were negative. He was retested 2.5 months later with MPA and 5 car waxes (as is) from his work. MPA now elicited a ++ reaction, but the car waxes were all negative.

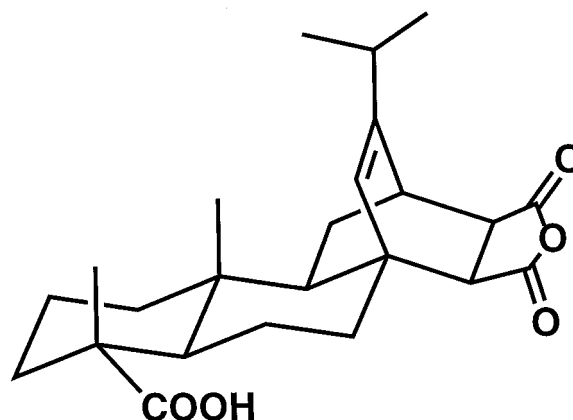


Fig. 1. Chemical structure of maleopimaric acid.

Discussion

It was concluded that the patient had become allergic to DGEBA-ER 25 years ago, still showing allergic patch test reactions to DGEBA-ER and brominated DGEBA-ER, which contains DGEBA-ER (8). The allergic patch test reactions to the 2 epoxy diacrylates may also have developed at that time, or represented cross-sensitivity. We did not have the opportunity to test him with the allergens in unsaturated polyester resins, e.g., diethylene glycol maleate (DEGM) (9), which might have given further information about his previous dermatitis.

The relevance of the allergic patch test reaction to MPA remained unclear. According to the manufacturers of all the waxes, none contained unmodified or modified colophony, and patch tests with the waxes were negative. The reaction to MPA may therefore have been of past relevance, perhaps from modified rosins in other car waxes or other products altogether. Previous studies at European contact dermatitis centres have shown that 0–5.9% of patients tested have allergic patch test reactions to MPA (3). Our result (0.5%) is in line with these previous studies.

Colophony in the standard series belongs to the 5–10 most common causes of allergic patch test reactions. Most of the colophony (rosin) used today is chemically modified. Modified rosins are used in paper sizing to make writing and printing paper water-resistant, printing inks, adhesive tackifiers, bubble gum, soldering fluxes, and in polymerization emulsifiers in the production of synthetic rubber (10). Modified rosins contain allergens such as MPA that are not present in unmodified rosins, such as colophony in the standard series. Therefore, patients may have concomitant sensitization to unmodified colophony and chemicals formed/added during modification of rosin, or be allergic separately to modified or unmodified colophony. Accordingly, patients who are negative to colophony may still have allergy to chemicals present in modified rosin, such as MPA. Therefore, to detect the allergen in rosin, it may not suffice to patch test only with colophony in the standard series.

In conclusion, MPA may be a valuable patch test substance for patients exposed to (modified) rosin, regardless of whether or not they have shown an allergic patch test reaction to unmodified colophony in the standard series. Screening all patients suspected of having occupational allergic contact dermatitis is not, however, cost-effective.

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