

Patch testing with myristyl alcohol

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Introduction

Myristyl alcohol (synonym: 1-tetradecanol; C₁₄H₃₀O; CAS 112-72-1), which is used as an emollient in cosmetics,

also serves as a basic component and solubility aid in metalworking fluids (MWF) (1–3). Contact sensitization to myristyl alcohol has been reported, mostly in case reports or small test series, in patients with contact dermatitis due to cosmetics or medical ointments (1, 2, 4–6). Test concentrations varied from 5% to 30% myristyl alcohol in pet. (1, 2, 4, 5). Clinical relevance of the positive test reactions could not always be substantiated. A limited number of control patch tests in nonsensitized individuals has been performed. Maak et al. found positive reactions with myristyl alcohol 30% pet. in 13 of 15, with 15% pet. in 1 of 20, and with 5% pet. in 1 of 15 controls (4). de Groot et al. observed negative reactions in 60 controls patch tested with myristyl alcohol 5% pet., and in 25 controls tested with 10% pet. In addition, 1 of 25 patients tested with myristyl alcohol 20% pet. had a ?+ reaction (1). Based on these data, we selected 10% pet. as patch test concentration for myristyl alcohol in a MWF patch test series. However, with this test preparation, soon a considerable number of doubtful reactions were observed (7). Prompted by the first test results of this series, patch testing with myristyl alcohol 10% pet. in addition to the standard series was started in the departments of dermatology at Odense, Denmark, and Göttingen, Germany, in order to investigate the reaction pattern to this test preparation in a larger group of patients.

Materials and Methods

Myristyl alcohol 10% pet. was prepared at a pharmacy in Göttingen from 99% pure chemical purchased from Sigma-Aldrich, Schnellendorf, Germany. Patch testing was done according to the International Contact Dermatitis Research Group guidelines in consecutive, nonselected patients, in addition to the standard series. Patch test exposure time was 2 days.

Results

In all, 90 patients were tested. Of these, 6 (7%) had a + reaction, 35 (39%) had a doubtful reaction, and 49 (54%) patients showed no reaction (Table 1). No positive reactions stronger than + occurred. Thus, reaction

Table 1. Patch test reactions to myristyl alcohol 10% pet. on D3

	Göttingen	Odense	Total (both centres)
Negative	39	10	49
?	22	13	35
+	4	2	6
Total	65	25	90

index (8) was -0.7 , and positivity ratio (9) was 100%. Concerning the proportions of reactions observed, there was no significant difference between the two centres. In none of the cases with a doubtful or positive test reaction, a clinical relevance could be found, and all these reactions were regarded irritant and not allergic.

Discussion

Patch testing with myristyl alcohol 10% pet. in consecutive patients showed that this test preparation has irritant properties rendering it unacceptable for allergen patch testing.

With a reaction index of -0.7 and weak positive reactions only, it has the typical constellation of a problematic allergen preparation (9). In addition, the complete lack of clinical relevance of the non-negative test reactions demonstrates that the reactions observed do not represent weak allergic reactions, but they are the expression of irritancy of the test preparation. It is hard to decide why we found substantially more irritant (doubtful and weak positive) reactions to myristyl alcohol 10% pet. than did de Groot et al. and Maak et al. (1, 4). As our concordant observations were made independently in parallel in the 2 centres, we can largely exclude any bias due to investigator peculiarity or particular patient selection. The test preparation was made from 99% pure chemical (stated by the manufacturer); hence, irritancy caused by any impurity can also be excluded. As our results concur with those found when patch testing myristyl alcohol 10% pet. in metalworkers (8), we believe these data to be valid.

Conclusion

Myristyl alcohol should not be patch tested at 10% pet. due to irritant properties. For future patch testing, we would recommend a lower test concentration, e.g. 5% pet.

References

1. de Groot A C, Bruynzeel D P, van Joost T, Weyland J W. Cosmetic allergy from myristyl alcohol. *Contact Dermatitis* 1988; 19: 76–77.
2. Tosti A, Vinzenzi C, Guerra L, Andrisano E. Contact dermatitis from fatty alcohols. *Contact Dermatitis* 1996; 35: 287–289.
3. 1-Tetradecanol. In: Gesundheitsschädliche Arbeitsstoffe. Toxikologisch-arbeitsmedizinische Begründungen von MAK-Werten, 33. Lieferung, Greim H (ed.): Weinheim, Wiley-VCH-Verlag, 2001.
4. Maak C, Masuch E, Zesch A. Zur lokalen Überempfindlichkeit von häufig verwendeten Externa-Hilfsstoffen. *Allergologie* 1983; 6: 437–449.
5. Auth R, Pevny I, Peter G. Ein Beitrag zur Wollwachsallergie. *Aktuelle Derm* 1984; 10: 215–220.
6. Pecegueiro M, Brandao M, Pinto J, Concalo S. Contact dermatitis to Hirudoid® cream. *Contact Dermatitis* 1987; 17: 290–293.
7. Geier J, Lessmann H, Becker D et al. Patch testing with components of water-based metalworking fluids. Results of a multicentre study with a second series. *Contact Dermatitis* (submitted).
8. Brasch J, Henseler T. The reaction index: a parameter to assess the quality of patch test preparations. *Contact Dermatitis* 1992; 27: 203–204.
9. Geier J, Uter W, Lessmann H, Schnuch A. The positivity ratio – another parameter to assess the diagnostic quality of a patch test preparation. *Contact Dermatitis* 2003; 48: 280–282.

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