Allergy to oxidized linalool in the UK

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The terpene fragrance linalool is increasingly recognized as a significant allergen in its oxidized state (1, 2). However, it is not routinely being tested in the UK. Available preparations for patch testing differ in concentration, and are not all oxidized. The prevalence of allergy to 3% oxidized linalool in consecutive patch test patients was investigated.

Method

At Great Western Hospital, Swindon, UK, 483 consecutive patients were patch tested with oxidized linalool 3% pet. (Chemotechnique Diagnostics, Vellinge, Sweden), between 1 December 2007 and 30 November 2010. An extended fragrance series including 10% stabilized linalool (Trolab, Reinbeck, Germany) was tested in 88 selected patients suspected of having fragrance allergy. Patch tests were applied on the back with Finn Chambers® (Epitest Ltd Oy, Tuusula, Finland) suspended on Scanpor® tape (Norgesplaster A/S, Vennsela, Norway). Readings were carried out on D2 and D4 according to the criteria of the International Contact Dermatitis Research Group.

Results

Of 483 patients tested, 11 (2.3%) had positive patch test reactions to 3% oxidized linalool. Four of these patients were also tested with the extended fragrance battery, and 3 had positive reactions to 10% stabilized linalool. Seven patients declined further patch testing. Of 88 patients tested with the extended fragrance battery, 4 (4.5%) had positive reactions to 10% stabilized linalool, including the 3 previously mentioned. There was 1 patient who reacted only to 10% stabilized linalool and not to 3% oxidized linalool.

The median age of the 12 patients who were allergic to linalool was 47 years (range 27–70 years). Eleven of 12 patients were female. The median duration of the rash was 18 months (range 6 months to several years). The sites affected were as follows: face (n = 5); flexures (n = 4); generalized (n = 3); neck (n = 3); hands (n = 2); feet (n = 2); perianal skin (n = 2); and skin surrounding a leg ulcer (n = 1). Only 2 patients were atopic. The relevance of the positive patch test was established in 7 cases and was unknown in 5. Products giving positive patch test reactions in these 7 patients, and labelled as containing linalool, were moisturizing creams (n = 3), antiageing creams (n = 2), sunscreen (n = 1), fine fragrance (n = 1), wet wipes (n = 1), tea tree oil (n = 1), and citrus insect repellent (n = 1). Only 2 patients had concomitant positive reactions to Fragrance Mix (FM) I, 1 to FM II, one to Myroxylon pereirae, and one to colophonium. The other 7 patients had no other positive patch test indicator for fragrance allergy.

Discussion

Linalool is found in more than 200 natural oils, including lavender, ylang-ylang, bergamot, jasmine and geranium
oils. It is present in 90–95% of prestige perfumes (3). Exposure to air allows oxidation of linalool, and renders it allergenic (1, 2). Cosmetic and detergent products containing linalool that have been open for several months are likely to be more allergenic.

This small study shows a significant rate of allergy to oxidized linalool 3% pet. in the UK, similar to the rates seen in multicentre European studies (1.3% positive to oxidized linalool 2% pet.) (1). Seven of the 12 patients in this series would not have been identified as having fragrance allergy if linalool had not been tested. Although the optimal patch test concentration for oxidized linalool has been suggested to be 6% (2), testing commercially available 3% oxidized linalool may be useful in the diagnosis of fragrance allergy.

References

1 Matura M, Sköld M, Börje A et al. Selected oxidised fragrance terpenes are common contact allergens. Contact Dermatitis 2005: 52: 320–328.