

Occupational allergic contact dermatitis from multiple essential oils

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Essential oils (EOs) are products with complex chemical composition that are obtained from plants, usually by steam distillation or cold-pressing.¹ Allergic contact dermatitis (ACD) from EOs is well-known and has been described for more than 80 different EOs.

CASE REPORT

A 46-year-old female massage therapist with an atopic background presented at our department with a 7-month history of eczematous lesions in the interdigital folds and dorsum of both hands. Occasionally, lesions were found in the perioral area and also in the axillae in relation to the use of deodorants.

The patient had been working at the same aesthetic center for 15 years. One year before, the center had started using Alquimia products (El Taller de Alquimia, Tortellà, Girona, Spain), which included more than 20 EOs. She usually applied a small amount of product to the dorsum of her hands to allow her clients to smell the scent, and afterwards she put her gloves on to carry out the massage. The patient also washed her hands more than 20 times per day. In addition, she had been drinking lemongrass tea once a day for more than 10 years. These teas were brewed using around 5 mg of fresh lemongrass leaves in 200 mL of water.

Patch testing was performed using the European baseline series, a fragrance series (Chemotechnique Diagnostics, Vellinge, Sweden), and the products used by the patient. The patch test was carried out with the preparations used by the patient on the skin of customers. However, there was no available information on their EO concentration. Readings performed on day (D) 2 and D4 showed positive reactions (+ to +++) to hydroxyisohexyl 3-cyclohexene carboxaldehyde, limonene hydroperoxide, linalool hydroperoxide, fragrance mix II, some components of the fragrance series (geraniol, hydroxycitronellal, *Lavandula*

angustifolia, *Cananga odorata*, geranium, and citral) and to 18 EOs (*Cananga odorata*, *Cinnamomum cassia*, *Citrus limon*, *Citrus paradisi*, *Citrus sinensis*, *Commiphora myrrha*, *Cymbopogon citratus* [lemongrass], *Geranium*, *Hyssopus officinalis*, *Juniperus*, *Lavandula angustifolia*, *Matricaria chamomilla*, *Melaleuca alternifolia*, *Mentha piperita*, *Origanum majorana*, *Salvia officinalis*, *Salvia rosmarinus*, and *sativa*).

Based on these results, we made a diagnosis of occupational ACD from multiple EOs. We prescribed a course of corticosteroid cream together with avoidance of contact with these products at work. Lesions disappeared with this treatment; however, they reappeared with repeated contact with the allergens at work. Although she continued drinking lemongrass tea, they did not trigger new lesions on the hands or anywhere else.

DISCUSSION

Up to 23% of massage and aromatherapy professionals develop ACD from EOs after 12 months.²⁻⁴ Not infrequently, these professionals develop simultaneous ACD from multiple EOs.⁵ This is caused not only by the concomitant use of multiple EOs, but also by their cross-reactivity. In this regard, most EOs share some compounds that are also included in the fragrance series; that is limonene and linalool are present in 97% and 88% of all EOs, respectively.⁶

Systemic allergic dermatitis has been described in patients with ACD from lemongrass oil⁷ and other EOs.⁸ However, our patient did not show systemic allergic response to lemongrass tea despite her ACD to lemongrass oil. The occasional axillary and perioral lesions did not correlate with tea consumption and could be explained by the use of deodorant and possibly direct transfer of allergens from the hands to face. The absence of a systemic response to teas could be explained by different modifications of the allergenic molecules in the extraction

process; in EOs, lipophilic molecules are extracted by steam distillation,^{6,9} whereas hydrophilic molecules are predominant in herbal teas. In addition, the lower concentration of allergens in teas compared to EOs may also contribute to explain the lack of systemic response.

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AUTHOR CONTRIBUTIONS

Herrero-Moyano M, Capusan TM, and Sánchez-Pérez J participated in data collection, reviewing of the literature, and writing of the manuscript.

Martínez- Mera C and Sánchez-Pérez J critically revised the manuscript.

CONFLICTS OF INTEREST

All the authors of this manuscript confirm that they have no conflicts of interest to declare.

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