

Commentary

Allergic contact dermatitis caused by *Lavandula angustifolia* and cross-reaction with *Citrus bergamia* essential oils in an aromatherapist**Francisco J. Navarro-Triviño¹, MD,  Paula Jadczak², PhD and Ricardo Ruiz-Villaverde³, MD **¹Department of Contact Eczema and Immunoallergic Diseases, Dermatology. Hospital Universitario San Cecilio, Granada, Spain; ²Department of Plant Genetics, Breeding and Biotechnology, Faculty of Environmental Management and Agriculture, West Pomeranian University of Technology in Szczecin, Szczecin, Poland; and ³Department of Dermatology. Hospital, Universitario San Cecilio, Granada, Spain**Correspondence**Francisco José Navarro Triviño, MD
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Conflict of interest: None.

Funding source: None.

doi: 10.1111/ijd.15027

A 48-year-old man was referred to our Department of Contact Eczema because of a chronic hand and occipital eczema which had been developing for the past 5 months. The patient had been working as a masseur and aromatherapist for over 20 years. No personal or family history was recorded, except for an eczematous reaction on the hands years ago after the use of ketoprofen gel which was not assessed by any doctor. In the last year, he has started to use a natural lavender cologne for relaxing massages, as well as the use as a natural treatment (Fig. 2b) for the cervical muscle contracture that he was suffering from. He has been applying the cologne to the occipital area. The patient did not treat the hand and occipital eczema. The composition of the cologne (Colonia Natural de Lavandula®, MadreSelva Cosmética Natural, Cantabria, España) was tested, and its components were as follows: alcohol denat, propanediol, and *Lavandula angustifolia* essential oil and additional components which were limonene, linalool, geraniol, and coumarin. Physical examination showed an erythema and fine peeling affecting the entire palm of the hand and ventral aspect of the fingers (Fig. 1a) associated with erythematous-desquamative plaque located in the occipital area of the neck (Fig. 1b). Mycological culture of the hands was negative, and blood test (biochemistry, blood count, IgE, and vitamin D) results were normal. Patch tests were performed with the European Comprehensive Baseline Series (Chemotechnique Diagnostics, Vellinge, Sweden), fragrance series (SmartPractice, Calgary, Alberta, Canada), natural lavandula cologne “as is”, lavender absolute 2% pet (Chemotechnique Diagnostics, Vellinge,

Sweden), and linalyl acetate 2% pet (Sigma-Aldrich Sweden, Stockholm). The results were interpreted according to the criteria of the International Contact Dermatitis Research Group. Patch tests were read on day (D) 2 and D4. The patient showed positive patch test reaction on D2 and D4 (*in crescendo* reaction) to Fragrance mix II 14% pet +++, Linalool 10% pet++, methylisothiazolinone/methylchlorisothiazolinone (MI/MCI) 0.02% aq +++, citral 2% pet ++, lemon grass 2% pet ++, bergamote oil 2% pet +++, lavender absolute 2% pet +++, lavender oil 2% pet +++, linalyl acetate 2% pet+++, and Natural Lavender cologne “as is” ++ (Fig. 2a).

Allergic contact dermatitis caused by lavender present in natural cologne was diagnosed. Information on all identified allergens was provided. Since bergamot oil is known to contain ingredients that are present in *Lavandula angustifolia* such as linalyl acetate and linalool, we interpreted the positive bergamot

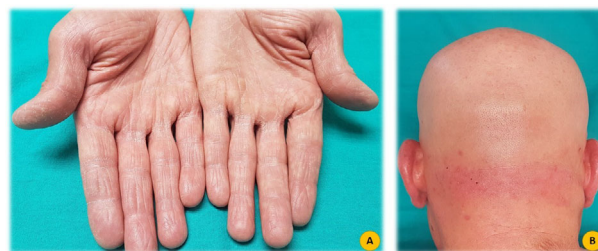


Figure 1 (a) Chronic hand eczema with moderate superficial desquamation folds. (b) Subacute eczema in occipital region

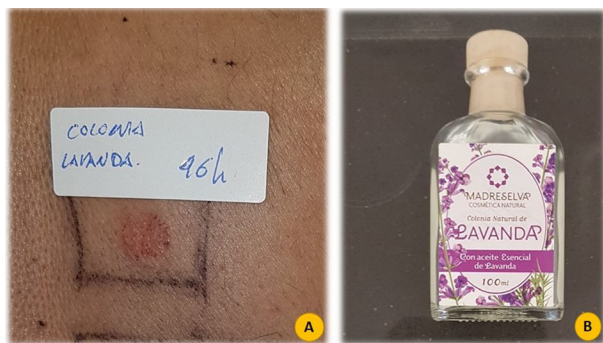


Figure 2 (a). Positive patch test to Natural Lavender cologne at D4. (b) Natural Cologne of Lavandula® (MadreSelva Cosmética Natural, Cantabria, España)

reaction to indicate relevance of the patient's use of the Lavandula cologne. The use of fragrance-free personal care products was recommended, as well as avoiding the use of natural products at work. Daily application of methylprednisolone aceponate 0.1% cream completely resolved the eczema in 7 days. No recurrence of eczema has been proved in 3 months since the last follow-up visit.

Narrow leaf lavender (*Lavandula angustifolia*) belongs to the *Lamiaceae* family, which is frequently used in cosmetics. Its composition of essential oils is a mixture of numerous compounds,¹ among which linalool, linalyl acetate, and geraniol stand out, mainly because of their sensitizing power after auto-oxidation, forming hydroperoxides. Its use has developed after the incorporation of this essential oil to multiple personal care products (e.g., soaps, cleansers, and moisturizers). Lavender essential oil is often used in products in aromatherapy. This plant has many medicinal properties which include, among others, sedative, antidepressant, antimicrobial, and mild muscle relaxant properties.²

Our patient used the natural lavandula cologne to treat the cervical muscle contracture that was causing his headache. In dermatology, *Lavandula angustifolia* has been used to treat wounds, eczema, psoriasis, and even alopecia areata.³ People who work as hairdressers, aromatherapists, masseurs, and physiotherapists are most at risk of allergies caused by contact with lavender essential oils.⁴ The main areas affected by lavender contact eczema are the hands and face.⁵ Although most cases of eczema are irritative, sensitivity to lavender is not negligible.⁶ Cases of airborne allergic contact dermatitis,⁷ or as photoallergic contact dermatitis,⁸ have also been described (lavender as a component of the ketoprofen vehicle).

Patch tests should be performed with the commercial fragrance series, and products "as is" if necessary. Linalyl acetate could be tested if the investigator wants to conduct a more accurate study, especially when lavandula and bergamot present simultaneous positive reactions. Cosensitization of lavandula with other essential oils is frequent.⁹ As far as we know, it is the first case that describes the cross reaction as bergamot oil because both share common components, such as linalyl

acetate and linalool. In addition, our patient presented positivity for Fragrance mix II, and the citral was positive. Lavender absolute contains significant levels of coumarin, however, the coumarin patch was negative. Preservatives such as MI/MCI were identified, although their presence was not observed in our patient's personal care products, since all those used at home were marketed as containing natural ingredients (Shower gel Mon® Biofactory S.L. Barcelona, Spain; Rosemary® Shampoo, Urtekram Int. Denmark).

Bingham et al.¹⁰ recommended in their article the use of lavender absolute as an allergen in patch tests, since it showed a higher sensitivity than that observed with lavender oil. In addition, they recommended, whenever possible, patching also with spike lavender oil 2% pet, considering this the most sensitive way to detect lavender sensitivities. The real and worrying incidence of linalool (which is a key component of lavender absolute) sensitization in recent years led to the publication of an amendment at the 38th meeting of the International Fragrance Association (IFRA), recommending the addition of antioxidants to those natural products containing linalool, such as those with lavender or bergamot oil.

We present a new case of allergic contact dermatitis to lavender and co-sensitization with bergamot oil. The use of cosmetic products of natural content (biocosmetics), such as lavender, has developed in recent years. The message of natural cosmetics can confuse the patient, believing that these products are natural and safe substances unable to develop sensitization. Patch testing is recommended if the history of contact is identified, mainly in risk groups such as aromatherapy and massage therapists.

Acknowledgments

We would like to acknowledge all staff working in the Contact Eczema and Immunoallergic Diseases Department, especially the specialized nurse Victor Alfredo Cassini Gómez de Cádiz.

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