

Patch-testing with Fragrance Mix II

To the Editor:

Contact hypersensitivity (CH) to fragrances has been known for a long time. Fragrance mix II (FM II), included in the European baseline series, provided further possibilities for detecting CH to fragrances. The aim of the study was to evaluate the CH ratio to FM II and its constituents among 1,555 unselected patients. The study was carried out by the authors in 2007–2009 in the Allergological Outpatient Unit of the Department of Dermatology, Venereology, and Dermato-oncology of Semmelweis University, Budapest. All 1,555 patients were tested with the standard environmental contact allergen series (Brial-Allergen GmbH, Greven, Germany) including fragrance mix I (FM I), *Myroxylon pereirae* (MP), colophony, pix lithanthracis (wood tar), propolis, sesquiterpene lactone mix, and FM II (14%). Among the 105 patients with CH to FM II, 37 were tested with the FM II constituents (citral 2%, farnesol 5%, coumarin 5%, citronellol 1%, α -hexyl-cinnamal-aldehyde (AHCA) 10%, and hydroxyisohexyl 3-cyclohexene carboxaldehyde (Lyrall[®], Brial Allergen GmbH) 5% (Brial-Allergen D-Greven). Testing was performed with 48 hours of occlusion, and reactions were evaluated at 48, 72, 96, and 120 hours and at 7 days.

CH to FM II was detected in 105 (6.7%) of 1,555 patients. Among these 105 patients, 23 were male with an average age of 51 years (18–75 yr) and 82 were female with an average age of 49 years (13–82 yr); 15 men and 56 women were older than 41 years. We found a connection between CH and occupation in nine cases. The most affected body sites were the hands (33 patients [pts]), legs (19 pts), face (14 pts), periocular region (11 pts), perioral region (7 pts), and axillae (6 pts). We detected isolated CH to FM II in 49 patients (46.7% of the 105 FM II–positive patients).

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Concomitant CH to FM I and FM II was detected in 35 cases. Concomitant CH to FM II and MP was observed in 8 cases (7.6%); CH to FM II and to other fragrance allergens (pix lithanthracis, propolis, sesquiterpene lactone mix, colophony) in 13 cases (12.4%).

Thirty-seven FM II–positive patients were tested with FM II constituents as well; 26 patients (70.3%) showed CH to at least one FM II component. Lyrall (43.2%) and citral (13.5%) were the most common allergens. The distribution of CH to the other FM II components was as follows: citronellol, 8.1%; coumarin, 8.1%; AHCA, 8.1%; and farnesol, 2.7%.

The frequency of CH to FM II in our investigations (6.7%) is in accordance with the data in the literature (2.1–9.3%).^{1–3} Concomitant CH reactions to FM I and FM II were detected in one-third of the FM II–positive cases. We believe this connection may be explained by the fact that simultaneous exposure to fragrances is very common, or perhaps by the related allergenicity of the individual constituents (eg, with the structural similarity of geranium oil, citronellol, citral, and hydroxycitronellal). Concerning the components, the 43.2% frequency of CH to Lyrall among the 37 FM II–positive patients is particularly high.^{1,4,5} It can be explained by the fact that the testing of the constituents was carried out not on unselected patients but only on FM II–positive patients. Recently, Krautheim and colleagues found similar results in their investigations.³

The 49 cases of FM II–isolated CH (46.7% of the positive cases and 3.15% of all the investigated cases) could not have been detected without the FM II test series. Among the constituents, Lyrall was the most important in our tested population.³

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This work was approved by the ethical committees related to the institution in which it was performed, and the subjects gave informed consent to the work.

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References

1. Uter W, Räämsch C, Aberer W, et al. The European baseline series in 10 European countries, 2005/2006—results of the European Surveillance System on Contact Allergies (ESSCA). *Contact Dermatitis* 2009;61:31–8, doi:[10.1111/j.1600-0536.2009.01572.x](https://doi.org/10.1111/j.1600-0536.2009.01572.x).
2. Heisterberg MV, Andersen KE, Avnstorp C, et al. Fragrance mix II in the baseline series contributes significantly to detection of fragrance allergy. *Contact Dermatitis* 2010;63:270–6, doi:[10.1111/j.1600-0536.2010.01737.x](https://doi.org/10.1111/j.1600-0536.2010.01737.x).
3. Krauthelm A, Uter W, Frosch P, et al. Patch testing with fragrance mix II: results of the IVDK 2005–2008. *Contact Dermatitis* 2010;63:262–9, doi:[10.1111/j.1600-0536.2010.01753.x](https://doi.org/10.1111/j.1600-0536.2010.01753.x).
4. Baxter KF, Wilkinson SM, Kirk SJ. Hydroxymethyl pentylcyclohexene-carboxyaldehyde (Lyrall[®]) as a fragrance allergen in the UK. *Contact Dermatitis* 2003;48:117–8, doi:[10.1034/j.1600-0536.2003.480212_4.x](https://doi.org/10.1034/j.1600-0536.2003.480212_4.x).
5. Schnuch A, Uter W, Geier J, et al. Sensitization to 26 fragrances to be labelled according to current European regulation. Results of the IVDK and review of the literature. *Contact Dermatitis* 2007;57:1–10, doi:[10.1111/j.1600-0536.2007.01088.x](https://doi.org/10.1111/j.1600-0536.2007.01088.x).