

### Case Report

A 26-year-old healthy non-atopic man, working as a joiner in a perfume factory, received pure phenylacetaldehyde on his face, trunk and arms, during the manipulation of a defected join. The substance absorbed by his clothes came in contact with the skin. The eyes were well protected by protection glasses. Very little was inhaled and none ingested.

Very quickly the worker took off his clothes and had a long shower of pure water and finally was doused with diphoterine, an amphoteric chelating solution, by the firemen. The same day he attended the emergency room with a discrete erythema of the chin, trunk and arms, without any systemic involvement. He was dismissed without treatment. 1 day after the accident, he attended our dermatology department because new papuloerythematous and vesicular pruriginous plaques appeared on

the arms and trunk. A treatment with dermocorticoids for an irritant and/or allergic contact dermatitis was prescribed, but the skin lesions worsened involving the face, trunk, arms, hands, knees and thigh (Fig. 1). 2 days after the accident, the patient received systemic prednisone, and the symptoms resolved after 1 week of treatment without relapsing.

The patient was patch tested 3 months after the work accident with the European Standard Series, preservative series, the 26 labelled fragrances and phenylacetaldehyde diluted 2% (1), 1% and 0.5% in pet. At D2, the patch tests for phenylacetaldehyde were positive: 0.5% ++, 1% and 2%+++. At D4, the results for phenylacetaldehyde were unchanged. The rest of the tests were all negative. 10 individuals were patch tested as controls with 0.5%, 1% and 2% phenylacetaldehyde and were all negative.

### Allergic contact dermatitis to phenylacetaldehyde: a forgotten allergen?

*Contact Dermatitis 2007; 56: 171–172*

S. Sanchez-Politta, A. Campanelli,  
F. Pashe-Koo, J.-H. Saurat and P. Piletta

Department of Dermatology and  
Venerology, University Hospital,  
1211 Geneva, Switzerland

**Key words:** allergic contact dermatitis; flavouring agent; fragrances; occupational contact dermatitis; phenylacetaldehyde.

Phenylacetaldehyde is a fragrance used in the manufacture of cosmetics and flavouring agents. It is known as a sensitizer but very little is reported in the medical literature. We report 1 case of contact allergy to phenylacetaldehyde in a worker at a perfume factory.



Fig. 1. Papuloerythematous and vesicular eruptions in the thigh 64 hr after phenylacetaldehyde exposure.

## Discussion

Phenylacetaldehyde is a fragrance used in the manufacture of perfumes, cosmetics and also as a flavouring agent. It is a sensitizer and an irritant (safety data, Material Safety Data Sheet). It is made by oxidation of phenylethyl alcohol and is an oily, colourless liquid. It is used to give a floral scent reminiscent of lilac and hyacinth, green and honeyed. Phenylacetaldehyde is also found in nature; in plants (absinth, jasmine sambac, lavender and lime), and in insects (lepidoptera, hymenoptera and coleoptera) that use it as a chemical communication system (2, 3).

Despite the fact that phenylacetaldehyde is widely used and is a sensitizer, we found only 1 article describing 4 cases of contact allergy to phenylacetaldehyde (4).

According to Fregert (4), and in our case, it seems that phenylacetaldehyde is a strong sensitizer. Nevertheless, no other cases are reported in medical literature. Is it because the concentration of phenylacetaldehyde in cosmetics is inoffensive or because the cases of contact allergy to phenylacetaldehyde are ignored? In fact, phenylacetaldehyde in cosmetics, following the International Fragrance Association's recommendations, is quenched with an equal percentage of phenethyl alcohol or dipropylene glycol.

In this case, it is difficult to affirm whether it is a primary sensitization or if the patient was already sensitized to phenylacetaldehyde. Our impression is that the first skin reaction was an irritation, and because of the persistence and penetration of phenylacetaldehyde in the skin, a contact dermatitis was enhanced. Nevertheless, because of the quick onset of the eczema, an elicitation of the sensitivity to phenylacetaldehyde cannot be ruled out.

Our case reminds us that phenylacetaldehyde is a sensitizing fragrance, present in cosmetics and food. As recently discussed by Schubert (5), we believe that it is important to report skin diseases in workers in perfume factory. These workers in contact with pure fragrances should be well protected by special garments and protection glasses.

*Testing*, 2nd edition. Amsterdam Elsevier, 1994: 211.

2. Bestmann H J, Vostrowsky O, Platz H. Male sex pheromones of noctuides. *Experientia* 1977; 33: 874–875.
3. Dotterl S, Jurgens A, Seifert K et al. Nursery pollination by a moth in *Silene latifolia*: the role of odours in eliciting antennal and behavioural responses. *New Phytol* 2006; 169: 637–640.
4. Fregert S. Sensitization to phenylacetaldehyde. *Dermatologica* 1970; 141: 11–14.
5. Schubert H-J. Skin diseases in workers at a perfume factory. *Contact Dermatitis* 2006; 55: 81–83.

Address:

Dr P. Piletta

Secteur des allergies cutanées

Policlinique de dermatologie

Hôpitaux Universitaires de Genève

24, rue Micheli-du-Crest

1211 Genève

Switzerland

Tel: 0041 22 3729440

Fax: 0041 223729470

e-mail: ppiletta@skinpulse.ch

## References

1. De Groot A C. *Test Concentrations and Vehicles for 3700 Chemicals*. Patch