Occupational contact allergy to a *Phalaenopsis* orchid cultivar

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Orchids have become popular as ornamentals in Denmark during the last 10–15 years. Although the first case of contact allergy to an orchid was published in 1875 (1), relatively few reports have appeared since, especially in the last 20 years.

**Case Report**

A 38-year-old florist was referred by her local dermatologist with suspected occupational contact dermatitis. Patch testing by the dermatologist showed positive reactions to nickel sulfate and hyacinth, and a positive prick test reaction to house dust mite.

The patient had no prior personal or family history of atopy, but, 8 years previously, had experienced an episode with itching rash on her hands, with spontaneous resolution.

The patient had been working as a florist for 24 years, and in the last 17 years, at her present job, she had handled, for example, Gerbera, roses, chrysanthemums, dahlias, common ivy, and orchids, including *Phalaenopsis* cultivars.

A year prior to referral, the patient developed an eczematous dermatitis on her hands and forearms after working with common ivy. The skin eruption was treated with corticosteroids, with excellent results. The dermatitis
recurred on a few occasions on her hands and arms at work, on one occasion being accompanied by rhinitis and asthma symptoms. The patient started working with gloves, and the dermatitis cleared completely.

The patient suspected contact with roses and bulbs as eliciting factors.

The patient was very fond of orchids, and had a collection of 30 orchid cultivars at home, mainly of the genus *Phalaenopsis*.

The patient was patch-tested with the European baseline series, including TRUE Test® (Mekos, Hillerød, Denmark) panels 1 and 2, supplemented with falcarinol 0.03% pet., α-methylene-γ-butyrolactone 0.01% pet., sesquiterpene lactone mix 0.1% pet., parthenolide 0.1% pet., chrysanthemum extract 3% pet. (*Chrysanthemum* cultivar), marguerite daisy 1% pet. (*Argyranthemum frutescens*), sunflower extract 2.5% pet. (*Helianthus annuus*), feverfew 1% pet. (*Tanacetum parthenium*), and her own plants (stalks, leaves, and petals) wetted with water and ethanol: *Gerbera*, roses, common ivy, freesia, Christmas rose, daffodils, lettuce, eucalyptus, and a *Phalaenopsis* orchid cultivar (Fig. 1).

The non-standardized allergens were applied in Finn Chambers® on Scanpor® tape (Smartpractice®, Phoenix, AZ, USA), with readings being performed on D2, D3, and D7, according to the International Contact Dermatitis Research Group criteria (2).

There were doubtful positive follicular reactions to nickel sulfate on D3 and D7. The patient had several transient doubtful positive reactions to her own plants, but there were also persistent reactions interpreted as positive, and these are listed in Table 1. Figure 2 shows the reactions to the *Phalaenopsis* cultivar.

Patch testing in 10 controls with the same *Phalaenopsis* cultivar gave negative results.

Prick tests were performed with the common inhalant allergens as well as with *Gerbera*, roses, common ivy, freesia, Christmas rose, daffodils, lettuce, eucalyptus and a *Phalaenopsis* orchid cultivar; there was a positive prick test reaction to *Dermatophagoides pteronyssinus*. The prick tests with the plants gave negative results on the day of testing, but after 24 hr erythma and infiltration developed at the test site of the *Phalaenopsis* orchid cultivar.

Prick testing of 10 controls with the same *Phalaenopsis* stalk, leaf, petal and pollen resulted in one doubtful reaction to *Phalaenopsis* stalk in 1 test subject.

**Discussion**

According to Hausen, at least six species within the orchid family (Orchidaceae) are sensitizing (3). These
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include species of several genera, such as Cypripedium, Paphiopedilum, Cymbidium, and Oncidium (3–5). Sensitization may be caused by contact with either wild orchids or bred orchid cultivars, the latter especially in amateur orchid growers (4).

The patient had symptoms only when working with plants, and the dermatitis disappeared when she started working with gloves. She had 30 orchid plants at home, but she handled them only occasionally as compared with the exposure to the same plants at work, where she unpacked them at arrival, moved them around on displays, and packed them for customers.

We have not found any cases of contact allergy to Phalaenopsis, but it has been reported that Phaelanopsis species contain quinonoid constituents, which are known causative agents of allergic contact dermatitis caused by orchids (3).

The positive reactions were weak, but were surprisingly strongest and most persistent to water-wetted orchid plant material – usually, quinones are soluble in alcohol and insoluble in water (4). As the strongest reactions were seen to the patch test materials wetted with water, the positive reactions may be caused by other unknown allergens in Phalaenopsis. Incidentally, Iwata et al. also reported weak positive reactions to two orchid species (5).

The weak reactions may also be attributable to an early phase of sensitization.

The weak transient reaction to Gerbera (1+ on D2) was considered to be false positive.

Orchid contact allergy is uncommon; a survey of 53 orchid growers in Singapore found no skin disease among the employees during the period of the investigation, but most employees could recall episodes of skin reactions, mainly hand dermatitis, following the introduction of new fungicides and insecticides (6).

In conclusion, the weak, but persistent, patch test reactions to all plant parts and the delayed reaction to the prick test are considered to represent the first case of true contact sensitization to a Phalaenopsis cultivar, caused by long-standing and heavy exposure to the plant, both occupationally and non-occupationally.

References