

Concomitant immediate and delayed sensitization by philodendron (*Philodendron scandens*) in a plant keeper

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Allergic contact dermatitis caused by handling of the foliage pot plant philodendron (*Philodendron scandens*) (Fig. 1) has occasionally been reported in both occupational and non-occupational settings (1–3). Mucosal symptoms, on the other hand, have not been reported previously.

Case Report

A 42-year-old female plant keeper was referred from the Department of Dermatology and Allergy Centre, Odense University Hospital to the Department of Occupational

and Environmental Medicine at Odense University Hospital because of suspicion of work-related mucosal allergy. She had a history of childhood atopic dermatitis, but no diagnosis of hay fever or asthma, and had never experienced work-related symptoms. In spring 2015, she started plant keeping, predominantly of *P. scandens* and *Dracaena surculosa*. After a few weeks, she noticed increased nasal congestion and a watery nasal discharge. The symptoms worsened, with itchy throat, dry coughs, and occasionally breathlessness and wheezing, which diminished during weekends and vacations. The patient started using gloves, an air mask and a nasal filter at work, and avoided contact with *P. scandens*. This reduced her symptoms. At the Department of Dermatology, the patient was tested with the baseline series supplemented with Compositae mix II 5% pet. (Chemotechnique Diagnostics, Vellinge, Sweden), faltarinol 0.1% pet., constituents of fragrance mixes I and II, and philodendron leaf and stem

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Fig. 1. *Philodendron scandens* plant.

'as is' wetted with water and ethanol. The patch test materials – except for the plant material – were applied to the back for 2 days with Finn Chambers® on Scanpor® tape (AllergEaze®, Phoenix, AZ, USA). The patient had positive patch test reactions to tixocortol 21-pivalate, fragrance mix II, hydroxyisohexyl 3-cyclohexene carboxaldehyde, and hydroxycitronellal, and ++ positive patch test reactions to *P. scandens* stem wetted with water and ethanol, but did not react to leaf, on day (D) 4 and D7 after 20 min of exposure. However, retesting the leaf with an application time of 2 days resulted in ++ positive reactions to leaf wetted with water and ethanol on D3. Five consecutive eczema patients were patch tested with philodendron leaf wetted with water and ethanol for 2 days, and 2 of 5 patients had doubtful reactions on D3, and none did react on D7.

The patient was also prick tested with standard inhalant allergens, bark chip, nitrile glove, and 25 plants 'as is': she had slightly positive reactions to all materials, including the negative control, representing dermographic urticaria. The reactions to philodendron leaf, weeping fig stem and a few other plants were larger than the rest. The patient's history was suggestive of immediate-type hypersensitivity, but, as the prick test reactions were difficult to interpret, they were supplemented with histamine release tests with six selected plant species. Histamine release tests gave positive results for *P. scandens*, *D. surculosa*, and *Ficus benjamina* leaves. Prick tests with *P. scandens* leaf in 10 controls, who were prick tested with standard inhalant allergens, gave negative results. The results of pulmonary function testing were normal.

Peak expiratory flow (l/min) was registered four times daily for 3 weeks, including a vacation. Variability was calculated according to guidelines, and was not significant: 30 l/min (6.2%). Rhinitis symptoms were subjectively registered on a modified five-point symptom scale (4). The patient had the highest score when in contact with *P. scandens*.

Discussion

Chemical studies in the 1980s established 5-alkylresorcinols and 5-alkenylresorcinols as the main contact allergens in some, but not all, *Philodendron* species: thus, Reffstrup & Boll reported that five of nine *Philodendron* species were devoid of resorcinols (5, 6). Contact sensitization to philodendrons may be diagnosed by patch testing with leaf and stem 'as is' or with a 1% short ether extract of the plant in pet. or with alkylresorcinols/alkenylresorcinols 0.1% pet. (7). According to the results of patch testing in controls in the present study, there seems to be an irritant potential, but the strong positive and persistent reactions in the patient were unequivocally allergic, even though she had only noticed dry skin of the hands at work. This symptom disappeared after the use of a moisturizer and gloves. Although contact allergy to *Philodendron* species is considered to be rare, the combination of occupational exposure and atopic dry skin seems to have caused sensitization in this case (7).

The development of IgE-mediated allergy to plants is an occupational hazard for plant keepers. The cleaning and trimming of a large plant specimen will raise allergen-containing dust that may sensitize skin and mucosal membranes and cause local symptoms, such as contact urticaria and rhinitis, as well as systemic reactions such as anaphylaxis (8–10). Weeping fig (*Ficus benjamina*), *Yucca* species and *Dracaena fragrans* are known causes of IgE-mediated immediate-type allergy (8, 9, 11, 12). Although philodendron of the Araceae family of plants has not been reported as a cause of allergic rhinitis, pothos (*Epipremnum aureum*), from the same family, elicited contact urticaria, symptoms of mucous membranes and a positive scratch patch test reaction in 1 person in a study of immediate reactions to plants in gardeners and greenhouse workers, however, laboratory tests were not performed, and the nature of the reaction was thus not clarified (13).

Persons with allergic rhinitis are also at risk of developing immediate-type sensitization to indoor ornamental plants, but the patient had no history of atopic mucosal disease, and no signs of occupational asthma (14).

In conclusion, the work-related symptoms, which correlated with the patient's exposure to the philodendron plants, and the results of prick and histamine release tests and rhinitis score are in support of her symptoms being caused by immediate-type allergy to *P. scandens* and possibly also *D. surculosa* and *F. benjamina*.

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