

Allergic contact dermatitis to English ivy (*Hedera helix*) – a case series

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There are many varieties of ivy but common ivy (*Hedera helix* ssp. *helix*) is the most prolific. There are approximately 15 species in the genus *Hedera* that belong to the Araliaceae family. The plants are native to Europe, North Africa, and Asia but are now grown in many other countries. Three main subspecies are found in Europe, namely *helix* (English ivy), *canariensis* (Canary Island ivy), and *poetarum*. Subspecies *helix* is distinguished from the tri-lobed subspecies *canariensis* by its five-lobed green leaves. They are a family of evergreen, climbing, often ornamental plants found creeping over walls and trees. The subspecies *H. helix* ssp. *helix* was the first subspecies described.

Common ivy should not be confused with poison ivy (*Toxicodendron radicans*), which grows abundantly in the USA. *Toxicodendron* dermatitis is the most common cause of contact dermatitis in the USA with approximately 15% of the population being sensitized (1). It is not a true ivy and belongs to the Anacardiaceae family.

Historically, due to its antifungal and antimicrobial properties, ivy extract

was used therapeutically in a number of topical agents as well as in expectorants. In addition, antitumour properties have been described (2) in the past, and ivy extract has also been used in a French anti-cellulite cream (Helancyl, Laboratoires Ducray, Paris, France).

Cases of both allergic and irritant contact dermatitis to the *helix* and *canariensis* subspecies were described as far back as 1899. The typical picture is of a linear and vesicular dermatitis and occurs mainly in the spring when ivy grows rapidly and is pruned.

In 1987, Hausen et al. isolated three polyacetylene compounds from common ivy (subspecies *helix* and *canariensis*). These were falcarinol, the major allergen, didehydrofalcarinol, a weaker allergen, and falcarinone, a ketone oxidation product of falcarinol. Its role as a sensitizer is unproven (3).

Given that ivy grows commonly in the UK, contact allergy is reported rarely.

Case Series

Between 1980 and 2007, 37 065 patients attended St John's Institute of Dermatology for patch testing. Over this 27-year period, 11 patients presented having developed a rash within days of suspected contact with garden ivy. Six patients were female and five male aged between 25 and 70 years (mean age 49.5 years).

All patients were amateur gardeners and none were atopic. In only five cases, predominant sites affected were the hands, three described a rash on the arms, two on the face, and one had a more extensive rash.

Ten cases described onset of the rash during the spring/summer months and

one patient developed the rash in autumn. Where it was stated in the history, the rash developed 1–3 days post-exposure. In all but one case, patients described previous episodes. One patient had suffered with a recurrent rash in the summer months since being 9 years old. As a child, she remembered having frequently climbed ivy-covered trees.

All patients were tested to the extended European baseline series of contact allergens (FinnTM Chambers and ScanporTM tape; Trolab and Hermal, Reinbeck, Germany). Three patients were also patch tested to a local plant series, three to a fragrance series, two to a face and light series, and two to a local medicaments series.

Patch testing to ivy was performed using the leaf, which all patients brought with them. One patient was patch tested to both the leaf and the stalk.

All patients showed a ++ reaction (International Contact Dermatitis Research Group criteria) to the leaf at D4 apart from two who showed a + reaction. A ++ reaction was seen in the patient tested to the ivy stalk at D4.

One patient was also allergic to primin, another to colophonium, and a third to coriander leaf (of the Umbelliferae family). Patch tests to other plant allergens and lactones were negative as were tests to thiurams.

A 12th patient, who was female and a nurse by occupation, was patch tested at the Royal Free Hospital. She described a recurrent rash affecting her hands and wrists over the previous 4 years following pruning ivy in her garden. Again, she gave no history of atopy. She was patch tested to both



Fig. 1. *Hedera helix* ssp. *Helix*.

the ivy leaf and the stalk and also showed a ++ reaction to both at D4.

Discussion

Both irritant and contact dermatitis have been described in association with *H. helix*, particularly in spring, when the allergen content is high. Most cases have been described after pruning and in children who have climbed trees or walls covered with the ivy. Falcarinol sensitizes guinea-pigs at a minimum concentration of 0.03% compared with 1% for dihydrofalcarinol (3). Falcarinol was initially isolated from ginseng root and has subsequently been isolated from carrots (4). It is also found in a number of members of the Apiaceae (Umbelliferae) family, which includes parsnip, carrots, celery, and a number of herbs including dill, coriander, and fennel. One of our patients showed a positive reaction to the umbellifer leaf, coriander.

Interestingly, the concentration of falcarinol has been found to be increased when plants are grown in soil infected with fusarium, which causes a fungal disease in plants. This lends support to the use of falcarinol in antifungal preparations.

Falcarinol and dihydrofalcarinol are not thought to cross-react with the major allergen of poison ivy, urushiol (5).

In only 50% of the patients patch tested in this series were the hands the primary site. This probably reflects the use of gloves. This also illustrates, however, that sole use of gloves is not necessarily adequate when handling plants such as ivy.

Ivy is a common garden plant that requires regular pruning; however, allergic contact reactions to it are rarely seen in the clinic. The low incidence of reactions may be because the diagnosis may have been considered by the patient or primary care physician or that contact allergy to ivy is being under-diagnosed. If a commercially available preparation was available for screening, a higher prevalence might be noted.

mour activity. *Planta Med* 1979; 36: 150–155.

3. Hausen B M, Bröhan W, König W A, Faasch H, Hahn H, Bruhn G. Allergic and irritant contact dermatitis from falcarinol and dihydrofalcarinol in common ivy (*Hedera helix* L). *Contact Dermatitis* 1987; 17: 1–9.
4. Hansen L, Boll P M. Polyacetylenes in Araliaceae: their chemistry, biosynthesis and biological significance. *Phytochemistry* 1986; 25: 285–293.
5. Ozdemir C, Schneider L A, Hinrichs R, Staib G, Weber L, Weiss J M, Scharffetter-Kochanek K. Allergic contact dermatitis to common ivy (*Hedera helix*). *Hautarzt* 2003; 54: 966–969.

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References

1. Stephanides S L, Moore C. *Plant Poisoning, Toxicodendron*, 2007 Available at: www.emedicine.com (last accessed on 8 August 2007).
2. El-Merzabani M M. Screening for Egyptian plants with potential antitu-