

Title page

Title: Allergic sensitisation to the irritant sap of the variegated century plant in a gardener.

Short title: Allergic sensitisation to the irritant sap of the variegated century plant

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Allergic sensitisation to the irritant sap of the variegated century plant in a gardener. A number of cases of irritant contact dermatitis caused by *Agave americana* have been reported, with various presentations, but very few of these (1,2,3) have been investigated by patch testing of patient and controls.

CASE REPORT

Here, we describe the case of a 38-year-old male gardener who, just prior to symptom onset (itching), had been trimming *Agave americana* plants with a chainsaw. He presented with a papulovesicular rash in the face (Figure 2.1). The rash was treated with a topical steroid and the patient was referred to our allergy service for investigation.

Fragments of the mucilaginous plant material had splattered forcefully onto his face. There was no conjunctival involvement, probably because he was wearing protective glasses. The patient had no systemic signs or symptoms. He denied any new medication intake. He had no allergies or other skin diseases.

We performed patch tests (Figure 2) in the dorsal region of the arm one month after the patient recovered. Patch tests with the sap of the plant in question (30% in water and in petrolatum) were performed with readings at day (D) 2 and D4. Tests were positive in both readings for plant sap in water and petrolatum (Figure 2.2). Four control subjects (two of them atopic) gave negative results (Figure 2.3 and 2.4).

Discussion

Agave americana L. (the century plant), formerly classified in the Agavaceae family but now considered to be a member of the Asparagaceae, grows in areas of the Mediterranean, Mexico and the southern United States. Its leaves are long, flattened and pointed with thorny edges. (1) The patient in this case was tending to a variety with yellow-edged leaves, commonly known as the variegated century plant, and known in the horticultural trade as *Agave americana* cv Variegata or *Agave americana* cv Marginata (Figure 1).

Irritant contact dermatitis has often been reported following exposure to the sap of *Agave americana*. (1-6) However, no cases of allergic contact dermatitis have been published. The most characteristic skin lesions are papulovesicular or papulopustular rashes (3,5,6) but they can be purpuric. (1,4,5) Most of the irritant contact dermatitis patients had been pruning the century plant with machines (chainsaw or trimmer).(4,5)

It is known that *Agave americana* contains needle-shaped crystals of calcium oxalate that are capable of penetrating and injuring the skin. (7) It is also known that *Agave* species are rich in saponins and that certain saponins are cytotoxic and/or can cause haemolysis through membrane disruption.(8) The injection of a sufficient quantity of such saponins into the skin by the needle-like crystals of calcium oxalate might explain the purpuric lesions. The sap of the variegated century plant also contains a protease (an endopeptidase). (9) Injection into the skin of a protease (dumbcain) by calcium oxalate raphides is believed to explain the irritancy of *Dieffenbachia* species.(10) Hence, it is conceivable that the skin reaction seen with *Agave americana* is caused in part by a protease present in the sap.

In our case, purpuric lesions were scarce, perhaps because the patient interrupted pruning of the century plant quickly as it was affecting his face. This minimal exposure to the sap may also explain why the patient presented no systemic symptoms such as those reported by Brenner et al. (3)

In conclusion, we present a case of irritant contact dermatitis caused by exposure to the sap of the variegated century plant, sustained by a gardener who had been cutting the plant using a chainsaw. After resolution of the injury to the skin, patch testing revealed that the patient had seemingly become sensitised to one or more substances present in the sap of the plant. Tests carried out in 4 controls were negative.

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Figure 1.

American agave cutting that the patient pruned with the chainsaw and planted in this pot



Figure 2. Papulovesicular rash on face after 5 days with topical corticosteroids and allergological study.

Figure 2.1

Patient with maculovesicular rash.

Figure 2.2

Patch tests with sap (A. Agave): Positive



Figure 2.3
Patch tests in control subject



Figure 2.4
Patch tests in control subject

