

Contact dermatitis from *Vernonia noveboracensis*

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Key words: allergic contact dermatitis; Compositae, horticulture; occupational; patch testing; plants; sesquiterpene lactones; *Vernonia noveboracensis*.

Case Report

A 48-year-old man developed a red, itchy rash with blistering on the medial surface of the forearms after contact with the plant *Vernonia noveboracensis* (L.) Willd., while working as a gardener in the Botanical Gardens of the University of Padua. Lesions regressed when he avoided further contact with the plant. He had no previous history of contact dermatitis or atopy.

1 year after the initial rash he had a fresh recurrence of the rash on his forearms after contact with the same plant. Patch testing, using Finn Chambers[®], was performed with the European standard series and a plants series (Chemotech-

nique, Malmö, Sweden). In addition, patch testing was performed with leaves (whole and chopped) of the plant. Results are shown in Table 1. Photopatch testing with the same allergens used for patch testing was negative.

Discussion

To our knowledge, this is the 1st case of allergic contact dermatitis from the *Vernonia* plant reported in the literature. *Vernonia noveboracensis* is a tropical plant whose natural habitat is the hot humid regions of North Africa, Europe, western and central Asia and North America. This plant belongs to the Angiosperm class, Asterales order, Compositae family, Tubuliflorea group (1, 2).

The Compositae (Asteraceae) family, with more than 20,000 species grouped in around 1000 genera, is the 2nd largest plant family (after grasses) and represents approximately 10% of the world's flowering plants (3). The characteristic appearance of Compositae plants consists of many tiny flowers (florets) clustered to form a flower head (capitulum) at the apex of the stem (4).

Allergic contact dermatitis from Compositae is an occupational disease in florists, farmers and professional gardeners, but is also caused by plant exposure in hobby gardening or from the use of plant-containing topical skin remedies (3). It usually affects middle-

aged men with a history of outdoor exposure. Typically, the dermatitis flares in the summer during the growing season and disappears in the winter. Flowers and leaves are more potent sensitizers than stems (5).

Sesquiterpene lactones (SL) are the major allergens implicated in allergic contact dermatitis caused by plants of the Compositae family (6). SL are 15-carbon molecules composed of a lactone ring attached to a sesquiterpene. The sesquiterpenes are one of the largest and most varied families of natural compounds; more than 200 skeletal types exist, with varied chemical functionalities (3, 4). These molecules, which have various biological effects including anti-inflammatory, antiviral and cytotoxic activity, are all characterized by the presence of a highly electrophilic α -methylene- γ -butyrolactone that bonds covalently with nucleophilic residues of proteins, thus forming a complete, immunogenic antigen (6).

Allergenic SLs are primarily found in 6 structural groups: eremophilanolides, germacranolides, eudesmanolides (santanolides), guaianolides, pseudoguaianolides (ambrosanolides) and xanthanolides (4). In the *Vernonia* plant (leaves, stems and flowers) 2 types of SLs are found: germacranolides and guaianolides (7). Our patient was positive to sesquiterpene lactone mix, which consists of a 0.1% mix of equimolar concentrations of 3 different sesquiterpene lactones: alantolactone, costunolide and dehydrocostuslactone, but was not positive to alantolactone when tested alone, alantolactone belonging to the eudesmanolides group, which has not been found in the *Vernonia* plant (7).

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Table 1. Patch test results

	D2	D3
European standard series	–	–
Plant series		
<i>Achillea millefolium</i>	–	–
<i>Arnica montana</i>	+	++
<i>Chrysanthemum cinerariaefolium</i>	–	–
<i>Chamomilla romana</i>	+	++
α -methylene- γ -butyrolactone	–	–
lichen mix	–	–
sesquiterpene lactone mix	–	++
<i>Tanacetum vulgare</i>	–	–
<i>Taraxacum officinale</i>	++	+++
alantolactone	–	–
<i>Vernonia</i> leaves (whole)	–	++
<i>Vernonia</i> leaves (chopped)	++	++

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