Contact allergy to 'bible leaf' used in folk medicine

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Tanacetum balsamita [syn. *Chrysanthemum tanacetum*, *Chrysanthemum majus*, bible leaf (USA), Costmary, or Alecost (England)] belongs to the Compositae (Asteraceae) plant family.

Contact allergy to plants used to be an occupational disease (1), but because of the increasing popularity of herbal remedies, the incidence of contact dermatitis is being observed more frequently (2, 3). We report

the case of a patient applying this 'medicinal' plant to treat a post-traumatic injury.

Case Report

A 65-year-old cook presented at the emergency unit because of an exudating painful/itchy dermatitis on his left index finger and oedema of his right eyelids. The problem started 3 weeks previously with a small wound on the fingertip after a minor trauma. He had a history of allergic rhinoconjunctivitis.

On examination, we observed an oedematous left index finger covered by a vesicular and crusted dermatitis (Fig. 1). We also noted erythematous and oedematous right eyelids with a few yellow crusts, as well as some erythematous papules on the right cheek. He had been using multiple topical treatments, including Hexomedine[®] solution (Melisana NV, Brussels, Belgium), Fucidin[®] ointment (Leo Pharma NV, Wilrijk, Belgium), Isobetadine[®] dermicum and gel (Meda Pharma, Amstelveen, the Netherlands), Furacine[®] ointment (Norgine NV, Heverlee, Belgium), and Eosine[®] solution (Melisana NV). On his own initiative (which he only reported later), he had applied on a few occasions the leaf of a 'medicinal herb' *T. balsamita* – to which he referred as 'women's leaf' – to his finger. He grew this plant in his garden and had previously used it to treat plantar warts. He had figured it might also be effective in the treatment of wounds. At first, the differential diagnosis of an acute contact dermatitis to antiseptics (with transfer by the hands to the face) or a herpes infection was suggested. Viral swab and fungal culture were negative, bacterial swab showed the rare presence of *Enterobacter cloacae*. Initially, there was a mild improvement of the

Fig. 1. Acute contact dermatitis on the left index finger.

finger and complete regression of the lesions in the face (eyelids and cheek) following local treatment with wet dressings and water-based paste. 2 weeks later, the dermatitis worsened again, and hence, we commenced wet dressings and a preparation based on betamethasone dipropionate 0.05%, which gave clinical improvement.

Patch testing with the European baseline series (Trolab, Hermal, Germany), the leaf of *T. balsamita* (as is), Compositae mix (Trolab, Hermal, Germany), and the components of his topical treatments showed a strong, positive reaction to sesquiterpene lactone mix (++ D2 and +++ D4), Compositae mix (+ D2 and +++ D4), *T. balsamita*

(+++ D2 and D4) (Fig. 2), isopropanol (as is) (+ D2 and ++ D4) and methylidibromo glutaronitrile (++ D2 and D4), as well as a positive reaction to fragrance mix (– D2 and + D4). In view of the morphology (vesicular spreading reaction), we did not perform patch tests with the plant in controls. Isopropanol has been patch tested in many controls, i.e., 750 patients since 1990, resulting in 33 relevant positive reactions, mainly in leg ulcer patients (to be published).

After reviewing the literature, we found L-carvone to be one of the main components of *T. balsamita*, so we performed patch tests with D-carvone (5%, 2.5%, and 1.25% in pet.) and L-carvone (5%, 2.5%, and 1.25% in

pet.). These tests remained negative after 2 and 4 days.

Discussion

Tanacetum balsamita (Compositae) received its common American name 'bible leaf' from the past where it was used as a place marker in bibles. However, it did not serve as just an innocent bookmark. Sleepy churchgoers would sniff and nibble on the edges of the minty leaf, and they would be revived during long, boring sermons. It is a yellow-flowering plant grown in Europe, Asia, and Australia (Fig. 3). The name 'balsamita' is because of the soft and aromatic balsamic odour of the volatile oil contained in the glands on the lower surface of the leaves. It has been used in folk medicine for its astringent and antiseptic properties and to treat common colds or intestinal discomfort.

In Europe, this plant has also been used to flavour different dishes, including salads, fatty minced meat, poultry, lamb, fish, potatoes, soups, sauces, beverages, cakes, and even beer (4). According to the patient, he had never used it for cooking. Moreover, it has been prohibited in Belgium since 1997 for use in food.

Leaves of this plant have been found to contain sesquiterpene lactones, being the most important allergens – also in our patient –, as well as a range of essential oils including L-carvone as the main component (5). Contact allergy to the latter component does not seem to be frequent and was also negative in our patient; however, according to Paulsen (6), reactions to this monoterpene seem to be more frequent than expected among patients with Compositae allergy, in particular. Possible explanations are a concomitant sensitization, true cross-sensitization, an irritant reaction, a facilitated immunological response, or the excited skin syndrome.

Furthermore, we also found a positive reaction to fragrance mix, which may be explained by cross-reactivity between essential oils and Compositae related to the common presence of terpenes (7).

The positive reaction to isopropanol referred to the antiseptic aqueous solution Hexomedine, which he had initially used to disinfect the wound on his finger. It thus needs to be considered as an exceptional allergen in iatrogenic dermatitis. As the wound

Fig. 2. Positive patch test reactions to 'bible leaf'.

Fig. 3. The plant *Tanacetum balsamita* (Asteraceae).

did not get better, he applied the bible leaf, which produced a severe dermatitis, also on the face, which was most probably induced by transfer of the allergen by the hands. We could not find any relevance, however, for the positive reaction to methyl dibromoglutaronitrile (perhaps present in one of the multiple liquid soaps he had used in the past?).

Conclusions

To our knowledge, this is the first case report of allergic contact dermatitis from the plant *T. balsamita* (Compositae or Asteraceae) because of sesquiterpene lactone contact allergy. We would like to emphasize the importance of thorough questioning of the patients about the topical treatments used, as they tend to forget or deliberately conceal the application of plants or other herbal medicines, which they do not consider as possible culprits anyway. However, because of their wide popularity, contact allergic reactions to them are increasingly observed nowadays, leading to multiple allergies, including fragrances.

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