

**A new case of
pseudophytodermatitis:
allergic contact dermatitis
from nickel in an
ornamental plant
(*Euphorbia triangularis*)**

P. D. Pigatto¹, P. Persichini,
F. Kokelj² and F. Daris²

¹Department of Dermatology, University of Milan and IRCCS Ospedale Maggiore, Milan, Italy, ²Department of Dermatology, University of Trieste, Trieste, Italy

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Some years ago we published a case of occupational allergic contact pseudophytodermatitis from *Ludwigia repens*, due to nickel present in this freshwater plant (1). Since then, no other such cases have been published. We now describe another, non-occupational, case of pseudophytodermatitis.

A 62-year-old-woman developed acute fingertip and palm dermatitis, tending ornamental plants in her own hothouse. She associated recurrences of the eruption with one particular plant, namely *Euphorbia triangularis*. She was patch tested with the GIRDCA standard series plus alcoholic and aqueous extracts of this

plant prepared as follows: 1 g macerated plant material was placed in 10 mL 95% of ethanol or distilled water, sealed and left to stand for 24 h, with occasional shaking. After 24 h, 10 mL supernatant was removed and another 10 mL ethanol or water added, to be removed 24 h later. The 20 mL supernatants were filtered, evaporated to 1 mL, and used for patch testing. The only positive reactions were to a fragment of the plant and nickel sulfate. Remembering our previous case, we thought that there might be nickel in the plant and proceeded to analyse it.

Samples were precision weighed and dried to constant weight at 55 °C and then digested in a mixture of sulphuric and nitric acids to solubilize the nickel and remove the organics. Nickel content determined by atomic absorption spectrophotometry (Perkin-Elmer 5000) with base corrector and graphite HGA 500 recorder; limit of detection 0.01 µg/mL) was 4.4 ppm in the ash. Fresh plant material is 90% water and 10% carbon, oxygen and hydrogen. Organic material removed from the dried plant after ashing represents 1.5% of its fresh weight. Thus, the fresh plant would contain 48.6 mg/kg of nickel, enough to elicit a reaction in the patient. We then established the threshold of sensitivity to nickel in our patient, by determining the minimum dose that elicited a patch test reaction at 3 and 4 days. She gave positive responses down to 3 ppm (2).

Euphorbia triangularis (river euphorbia) can be found in dry or scrub forest areas. It typically has

stout green-angled stems, with between 3 and 5 flat sides and with spines protruding all along the ridges. It is adapted to surviving drought situations and often grows very easily from seed or stem cuttings. The levels of nickel in soil and its transfer to plants were recently determined (3). The elements in extracts prepared from herbs were shown to vary considerably, depending on type of soil, up to a concentration of more than 1000 ppm (4).

References

1. Pigatto P D, Bigardi A S, Daris F, et al. Occupational allergic contact dermatitis from nickel in an aquatic plant (*Ludwigia repens*): pseudophytodermatitis. *Contact Dermatitis* 1995; 32: 245.
2. Farago M E, Cole M M. Nickel and plants. In: Siegel H (ed.) *Metal Ions in Biological Systems*, Vol. 20. New York: Marcel Dekker, 1986.
3. Tibazarwa C, Corbisier P, et al. A microbial biosensor to predict bioavailable nickel in soil and its transfer to plants. *Environ Pollution* 2001; 113: 19–26.
4. Slaveva R, Spirevska I, et al. The content of trace metals in some herbal teas and their aqueous extracts. *A. Pharmaceutica* 1998; 48: 201–209.

Address:
P. D. Pigatto
Department of Dermatology
University of Milan
Milan
Italy