

PLANT DERMATITIS DUE TO INDIGENOUS *SMODINGIUM ARGUTUM*

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ABSTRACT

Smodingium argutum is an indigenous tree in the family Anacardiaceae. It is considered to be the most common cause of plant contact dermatitis in South Africa. Four children were seen with a characteristic 'poison-ivy type' rash caused by contact with this tree. In each child the cause of the rash and the nature, duration and distribution of the rash were virtually identical. The natural distribution of *Smodingium argutum* in South Africa and its recognition as an important cause of plant dermatitis are presented. The allergenic component found in the leaves and sap of the *Smodingium argutum* tree has been identified as a C17-catechol, related to the Urushiol found in American poison ivy.

Keywords: *Smodingium argutum*, plant contact dermatitis, 'poison-ivy-type' rash

INTRODUCTION

In 1953, seven patients from Pretoria and Johannesburg with a unique dermatitis closely resembling that caused by contact with American poison ivy were reported.¹ All of the patients had reacted to an indigenous plant identified as *Smodingium argutum*. The plant is known by various common names, including Tovana and Rainbow leaf. It soon became apparent that *Smodingium* dermatitis was well known to people in the Eastern Cape and to horticulturists and amateur gardeners in the former Transvaal (now Gauteng) for many years before the medical profession became aware of the severe plant dermatitis caused by contact with it.

CASE REPORTS

Four children, two from each of two families, were seen in Alberton over a period of two years. The youngest was two years old, the oldest ten years. Three were boys and one a girl. All lived close to Alberton in Gauteng. In every case the history was exactly the same: the children had been helping their parents or were with their parents in the gardens of their homes. Their parents had been pruning a shrub or a tree in the garden at the time. The plants had rather prickly trifoliate leaves and branches that exuded a milky sap when cut. The sap soon turned brown once exposed to air.

All the children came into contact with leaves of the tree and three also had contact with the sap. Within 20 minutes of contact all of the children developed an erythematous, indurated burning and an itchy, noticeably streaky rash with blistering on the exposed areas of their bodies. The rash involved mainly their faces, causing some swelling, and their necks, arms and chests (see Figures 1 and 2). The parents developed almost exactly the same rash with the same distribution. The children (and their parents) immediately went to the nearest hospital emergency department. There the children were all given a short course of

oral prednisolone, oral antihistamines and topical corticosteroid ointments to be applied as needed. Despite this treatment, the rash persisted for at least 10 days in three of the children and for almost three weeks in the oldest child. The parents also experienced an itchy, burning rash of long duration.

When I saw the children, their rash had already cleared up completely. None of the children was atopic. Fortunately, their parents had taken photographs of all their children's rashes, clearly showing the severity and distribution. Fortunately, too, the parents brought with them a cutting of a branch with the typical trifoliate leaves of the shrub or tree that they had been pruning. As they were having difficulty in identifying the specimens, these were taken to Cape Town, where botanists at the Kirstenbosch



Figure 1: Rash on face and neck following contact with *Smodingium argutum*



Figure 2: Typical linear rash of plant dermatitis



Figure 3: Trifoliate toothed-edge leaf of *Smodingium argutum*

Botanical Gardens identified them as *Smodingium argutum* (see Figure 3).

DISCUSSION

The first report of dermatitis resulting from *Smodingium argutum* is that by Finlay in 1963.¹ He gives a most interesting account of the first description of the plant by Drege in 1832. This was followed by the first recognition of its allergenic potential by Sister Stephany, missionary and botanist at the Little Flower Convent in the Eastern Cape in 1912.

Smodingium argutum is not the only tree or shrub in South Africa known to cause plant dermatitis, although it is probably the most common. In his dermatology practice in Gauteng, Whiting² saw 24 patients with plant dermatitis over a 27-month period. Of these, 11 reacted to *Smodingium* and the rest to one of *Rhus succadanea*, *Rhus radicans*, *Hedera* (ivy), *Primula* spp or *Chrysanthemum* spp.

Smodingium argutum is found only in South Africa and no other species of *Smodingium* in the family Anacardiaceae are found here. The plant varies in appearance, being sometimes no more than a woody shrub 50 cm high and at other times growing to a tree up to 6 metres in height. When it is situated in a shaded area, it may grow like a creeper around other trees. The leaves are trifoliate with obvious toothed edges. Skin contact with both the leaves and the sap in the stem results in the typical rash. The flowers of the tree are insignificant and male and female flowers are carried on separate plants. The wings of the red fruit also contain a resin. The Eastern Cape, KwaZulu-Natal, Mpumalanga and Lesotho are its natural habitat. Owing to its striking appearance, especially in the autumn when the leaves

have a multi-coloured appearance, the plant is often called the Rainbow Leaf. *Smodingium* was planted in botanic parks and municipal gardens in many parts of Gauteng in the past and was also introduced into private gardens by nurseries.

Heyl et al³ identified the active component in the sap of *Smodingium argutum*. This followed a mass outbreak of *Smodingium* dermatitis involving more than 50 children attending a school in Gauteng. The children had all had contact with the lower branches of a *Smodingium* tree in the quadrangle of the school. The active substance was isolated from the fresh branches and the cut leaves of a *Smodingium argutum* tree. It was identified as a catechol with a 15-atom side chain in the third position, closely related chemically to the toxic substance Urusiol found in American poison ivy.

TREATMENT

Mild cases of *Smodingium* contact dermatitis usually respond to topical calamine lotion, dilute topical corticosteroid creams and oral antihistamines. More severe cases usually require oral corticosteroids, sometimes in a high dose initially, followed by maintenance therapy for to 2–4 weeks. Topical corticosteroids are relatively ineffective.² Tepid baths are advised to relieve the irritation of the rash. Bathing helps by cooling the skin and removing any dried sap that may remain following contact with the tree. It is important to advise that the tree or shrub be removed if it is in the patient's garden.

Healthcare practitioners working in areas where *Smodingium argutum* trees and plants are found should be aware of the severe dermatitis that can result from contact with the sap and also with the leaves of this plant. The appearance of affected patients may occasionally resemble that of someone with angioedema and urticaria. This in turn may lead to unnecessary investigations and treatment. A good history will soon help in making the correct diagnosis. If a specimen or photograph of the *Smodingium argutum* plant with its characteristic trifoliate tooth-edged leaves is available at the same time, this will greatly assist in making the diagnosis.

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DECLARATION OF CONFLICT OF INTEREST

The author declares no conflict of interest.

This article has been peer reviewed.

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