

Allergic contact dermatitis caused by argan oil, neem oil, and *Mimosa tenuiflora*

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Patients with psoriasis frequently consider complementary and alternative medicines, including herbal

therapies, traditional Chinese medicine, homeopathy, and dietary supplements, to be remedies with a perceived lack of side-effects (1). Several herbal preparations (i.e. *Aloe vera*, *Indigo naturalis*, *Mahonia*, *Camptotheca*, *Mimosa tenuiflora*, *Argania spinosa* kernel oil, and *Melia azadirachta* seed oil) have been claimed to be beneficial for treating psoriasis, although the level of scientific evidence is low (1). However, natural remedies may be non-negligible causes of allergic contact dermatitis (2).

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Case Report

A 30-year-old non-atopic woman developed acute eczema of the neck, and in the retroauricular and laterocervical areas (Fig. 1). In the days preceding the eruption, the patient had treated her scalp and periauricular psoriasis with phytotherapeutic topical medicaments containing pure neem oil and tocopherol, 100% argan oil, and glyceric extract of *M. tenuiflora*; moreover, she had used an argan perfume. No preservatives or other known potentially allergenic components were declared on the labels, except for the argan perfume containing alcohol, perfume, butylphenyl methylpropional, benzyl salicylate, coumarin, limonene, linalool, benzyl benzoate, citral, and geraniol. Allergic contact dermatitis was suspected;



Fig. 1. Acute eczema of the neck caused by phytotherapeutic topical medicaments for the scalp and auricular psoriasis.



Fig. 2. Positive patch test reactions at D4.

topical mometasone cream healed the contact dermatitis and improved the psoriasis over a period of 10 days.

Patch tests were performed with the SIDAPA Italian baseline series, a cosmetic series (Euromedical®, Calozio-corte, LC, Italy), pure tocopherol, and the patient's own topical herbal products, tested 'as is'. AllergEAZE® clear patch test chambers on a polyurethane film were used. Readings were performed on day (D) 2 and D4 according to ICDRG guidelines. Positive reactions were observed to the product containing neem oil and tocopherol, to 100% argan oil 'as is', to argan perfume 'as is' (all D2 ++, D4 ++), and to glyceric extract of *M. tenuiflora* (D2 +, D4 +) (Fig. 2); patch tests with pure tocopherol, allergens of the SIDAPA baseline series and the cosmetic series all gave negative results.

Patch tests with serial dilutions of the phytotherapeutic products and single ingredients of the argan perfume were not performed, because the patient refused further testing. Patch tests with all herbal products 'as is' in 8 healthy controls did not elicit any irritant or allergic reactions.

Discussion

Argan oil, which is widely used for cosmetic and nutritional purposes, is obtained from unroasted kernels of *A. spinosa*, a tree endemic to Morocco. It is a complex mixture of acylglycerides (99%), primarily triglycerides, and unsaponifiable matter (1%). The latter contains triterpene alcohols, phenols (flavonoids), tocopherols, carotenes, sterols, and xanthophylls (3). Neem oil is derived from cold pressure treatment of the seed kernels of the tree *Azadirachta indica*. It is commonly prescribed in Ayurvedic medicine, and is used in cosmetics and insect repellent products. Among more than 140 compounds isolated from neem oil, including unsaturated and saturated fatty

acids, and unsaponifiable matter, the possible allergens are triterpenoid compounds (such as azadirachtin and nimbin), phenols (flavonoids), and coumarins (4). *M. tenuiflora*, with its alleged skin-soothing and antimicrobial properties, is also rich in flavonoids, saponins, and tannins (5).

Few cases of contact allergy to neem or argan oil have been reported in the literature (6–10); one of these was in a patient with scalp psoriasis. As in the previous reports, the causative allergen could not be identified, as we were unfortunately unable to analyse the patient's own phytotherapeutic products. The peculiar multiple

sensitization in our patient could be attributable to common constituents in *M. tenuiflora* extract, and argan and neem oil. Cross-reactions among some of their allergenic molecules with similar chemical structures (e.g. triterpenes or phenols) may also be hypothesized. However, concomitant independent sensitization to different allergens cannot be excluded.

This case highlights the allergenic potential of herbal products, especially if they are applied on inflamed skin, and underscores the usefulness of patch testing with patients' own products.

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