

Anaphylaxis to argan oil

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Argan oil is obtained following ancestral procedures by heating, roasting and pressing the nuts contained in fruits of *Argania spinosa* (Sapotaceae), an endemic tree growing in arid and semi-arid area in South-West Morocco. In Morocco, argan oil is traditionally used for its cosmetic, medicinal and nutritional properties, linked to its high content in unsaturated fatty acids and phytosterols (1, 2).

We present the first case of allergy to argan. A 34 years old Moroccan man without allergy history reported a rhinitis and conjunctivitis occurring when he smelled argan oil. The ingestion of argan oil induced epigastralgia and hypersalivation. The treatment consisted in levocetirizine (5 mg) and prednisolon (40 mg), aerosolization of terbutaline and oxygenotherapy. The persistence of throat discomfort resolved within 2 h with administration of methylprednisolon (120 mg) and desloratadin (5 mg).

The prick-tests to argan oil and argan paste (residue after oil extraction) were positive with wheal diameters of 10 mm and 18 mm while the wheal diameter of positive control (codeine 9%) was 8 mm. Twenty minutes later, the patient developed a systemic reaction consisting of generalized erythema, beginning on arms, with secondary urticaria. The peak flow fell from 500 l/min to 400 l/min with a throat discomfort.

Anaphylaxis to argan oil documented by specific IgEs to a 10 kDa protein.

An avoidance diet of argan oil and the carrying of an emergency kit (epinephrine, antihistamine, and corticosteroid) were prescribed.

Proteins were extracted by mixing one volume of argan oil to two volumes of butanol/di-isopropyl ether (60/40, v/v) and 0.2 volumes of 50 mM PBS pH 8.0. Samples were mixed 30 min on a rotator providing end-over-end rotation at 30 rpm, and then centrifuged 5 min at 450 g. The lower phase containing protein was collected, lyophilized to concentrate proteins. As a result, proteins were finally concentrated 100 fold compared with the concentration in argan oil, estimated to be at less of 1 mg/l by spotting on polyvinylidene fluoride (PVDF) membrane. Argan nuts were homogenized in Tris 20 mM pH 7.2, centrifugated at 14 000 g during 30 min at 4°C.

The total proteins extracted from 1.5 ml of argan oil were submitted to gel electrophoresis under reducing conditions (12% polyacrylamide precast gels,

NuPAGE® Novex Bis-Tris; Invitrogen, Carlsbad, CA, USA). The silver stained electrophoresis reveals several clear bands in argan oil with molecular weights from 3 to 98 kDa (Fig. 1A). This protein pattern is quite similar towards the major proteins to the one observed for argan nuts after Coomassie blue staining (Fig. 1B).

Immunoblotting was carried out on argan oil extract electrophoretically transferred to PVDF membranes using 1/10 diluted serum from the patient allergic to argan oil or a control serum. Bound IgEs were detected by peroxidase-conjugated goat anti-human IgEs (KPL), using ECL Plus western blotting kit (GE Healthcare Europe GmbH, Saclay, France). Immunoblotting analysis shows IgE reactivity to one band of about 10 kDa. This band disappears after inhibition with 1mg/ml of proteins extracted from argan nuts (Fig. 1C).

During the last 20 years, argan oil became an expensive oil, consumption of which extended to western and Far Eastern countries because of its fatty

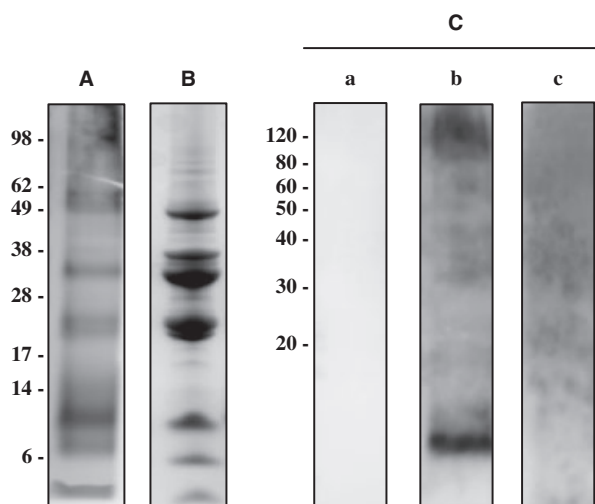


Figure 1. Gel electrophoresis and IgE immunoblotting. A: Silver stained SDS-PAGE of argan oil extract; B: Coomassie blue stained SDS-PAGE of argan kernels extract; C: IgE immunoblotting with serum from a non atopic subject (a) with serum from a patient allergic to argan before (b) and after inhibition with 1 mg/ml protein extracted from argan kernels (c). Gels were loaded with protein extracted from 1.5 ml argan oil and with 40 µg of argan kernels proteins. Serum dilutions used for immunoblotting were 1/10.

acids profile (3). It is expected that new cases of allergy to argan oil could appear. The identified allergen is a protein of 10 kDa, persistent in oil. This protein could belong to the family of oleosins which are known to be potent allergens as described for peanut and sesame (4, 5). The ability to induce severe reaction at low doses is underlined by the systemic reaction induced by prick-test and the low reactogenic dose. It must be taken in consideration by oil producers that allergenicity of argan oil could be suppressed by step of refining (6).

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