

Figure 1. IgE immunoblotting. Lane 1, negative control; lane 2, hake with patient's serum; lane 3, raw angler fish with patient's serum; lane 4, cooked angler fish with patient's serum.

shellfish and anisakis. Prick-by-prick test showed positive reaction to raw angler fish, and negative to cooked angler fish. The handling tests were negative to cooked angler fish, and positive to raw angler fish with immediate development of urticaria in areas of contact. Total serum IgE was 216 kU/L.

Fish extracts (angler fish and hake) were extracted in phosphate buffered saline (PBS) by mixing 10 g of extract in 100 ml of PBS. Raw angler fish and hake were extracted at 4°C, and cooked angler fish at 80°C. After it had been stirred for 90 min, the solution was centrifuged and then passed through a Millipore filter (0.22 µm), with a final dilution of 1/10 w/v. Sodium dodecyl sulphate-polyacrylamide gel electrophoresis of fish extracts and IgE immunoblotting with the patient's serum were performed.

IgE immunoblotting (Fig. 1) showed specific recognition of several bands by the patient's IgE. In raw angler fish, and faintly in hake, bands between 37 and 50 kDa were observed. No bands were seen in cooked angler fish.

In the majority of allergic reactions to fish the responsible allergens are low molecular weight heat-resistant proteins that belong to the parvalbumins (1–3), and the reactions occur after fish ingestion.

It has been reported that fish antigens of > 40 kDa molecular weight are more heat-sensitive (4, 5), and are probably responsible for isolated contact urticaria without allergic symptoms after oral intake (6). These allergens are not well characterized.

In conclusion, this patient has contact urticaria for isolated allergy to angler fish, with a good tolerance to its ingestion. This study demonstrates a type-I hypersensitivity to heat-sensitive angler fish allergens.

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Anaphylactic reaction to manioc: cross-reactivity to latex

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Key words: food allergy; manioc; cross-reactivity; latex.

The association of latex allergy and allergy to plant-derived foods is called latex-fruit syndrome. An increasing number of plant sources have been associated with this potentially life-threatening syndrome.

Anaphylaxis to manioc due to cross-reactivity with latex.

Manioc (*Manihot esculenta*) is a highly important food in South America (native to Brazil) and Africa. The tuber, also known as cassava root, can be eaten fried, cooked, toasted or raw (flour), being the source of most of the daily carbohydrate intake for large populations in the tropics. Mainly eaten as a substitute for potato, this food is slowly entering European dietary habits. To our knowledge, there is no report in the literature of any allergic reaction to manioc.

We report a case of a 51-year-old woman, born in Mozambique, with a previous history of bronchial asthma and multiple pelvic-abdominal surgeries (last one performed 9 years ago), who, over the last 2 years, has experienced several episodes of anaphylactic reactions

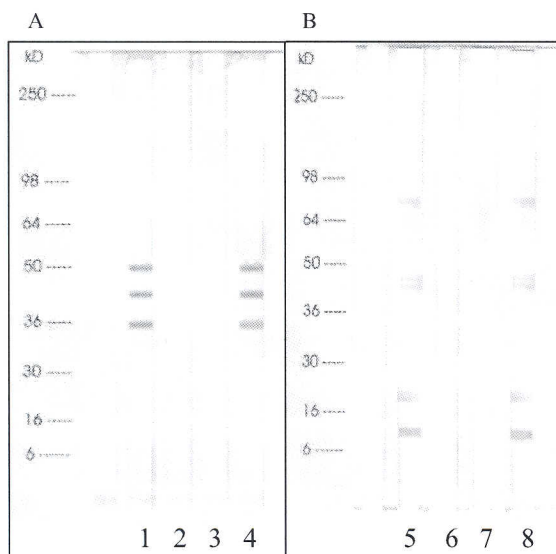


Figure 1. Panel A: Manioc AlaBLOT® IgE Assay: IgE binding to manioc allergens was completely inhibited by latex and manioc extract (100%). Lane 1, non-inhibited; lane 2, inhibited with manioc extract; lane 3, inhibited with latex extract; lane 4, inhibited with dog epithelium extract (as negative control). Panel B: Latex AlaBLOT® IgE Assay: IgE binding to latex allergens was partially inhibited (83%) by manioc extract (10 µl of manioc extract, concentration of 10 mg protein/ml) and completely inhibited by latex extract (100%). Lane 5, non-inhibited; lane 6, inhibited with latex extract; lane 7, inhibited with manioc extract; lane 8, inhibited with dog epithelium extract (as negative control).

immediately after eating foods cross-reacting with latex (chestnut, kiwi, passion fruit, papaya, mango, peach, fig, melon, tomato and spinach) (1). One year ago the patient also had an anaphylactic reaction, with generalized urticaria, bronchospasm and laryngeal oedema, 30 min after eating boiled manioc. Later she had a similar reaction immediately after eating a small amount of raw manioc (tapioca flour). Both reactions required treatment with subcutaneous epinephrine, intravenous corticosteroids and antihistamines, and the symptoms subsided 24 h later. Since then she has avoided these foods. Previously, she used to eat these foods, namely manioc (which she had been eating since childhood), with no adverse reaction. She denied any exposure to latex for the last 4 years.

The patient was referred to the Immunoallergy Department. Skin-prick tests (SPT) to commercial latex extract were strongly positive (Stallergènes, France). SPT to foods with known cross-reactivity with latex were positive to chestnut, mango, spinach and potato (commercial extract), peach, kiwi, passion fruit, papaya, fig, melon and tomato (fresh food). SPT to fresh

manioc, raw and cooked, were also strongly positive. We also tested 10 atopic patients, followed-up in our department, with fresh raw and cooked manioc, as controls, all being negative. Serum total IgE (AlaSTAT®, DPC-Amerlab) was 118 kU/l and latex-specific IgE (Immulite® 2000, DPC-Amerlab) was 67.4 kU/l (class 5). The challenge test with latex glove was strongly positive (anaphylactic reaction after 10 min hand contact). An oral challenge with manioc was not performed as the patient had severe anaphylactic reactions after eating this food.

Sodium dodecyl sulphate-polyacrylamide gel electrophoresis immunoblotting was performed with manioc and latex extracts (DPC, Los Angeles, USA). The immunoblotting analysis (AlaBLOT® Specific IgE Procedure, DPC) showed three protein bands of around 35, 42–44 and 50 kDa to crude manioc extract. In inhibition assay, IgE binding to manioc allergens was completely inhibited (100%) by latex extract (AlaBLOT® Inhibition Assay Procedure, DPC) (Fig.1 – lane 3).

IgE immunoblotting analysis demonstrated the existence of six protein bands of around 13–14, 17–18, 26–27, 42–44,

59–60 and 70 kDa to latex. Inhibition of this reactivity was partially obtained with manioc extract (83%) (Fig.1 – lane 7). Manioc extract completely inhibited IgE binding to 42–44 kDa band, probably corresponding to patatin-like latex protein *Hev b7*, previously identified as responsible for cross-reactivity with potato and tomato; patatin was recently confirmed as a potential food allergen (2).

In conclusion, this case report represents the first description of an IgE-mediated allergic reaction to manioc. Cross-reactivity between manioc and latex was proved by inhibition analysis, and manioc should be added to the growing list of foods involved in the latex-fruit syndrome.

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Kiss-induced facial urticaria and angioedema in a child allergic to fish

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Key words: children; fish; food allergy; kissing.

An account of the elicitation of urticaria and angioedema on the face of a 2-year-