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## Latex-jujube cross-reactivity: case report and immunological study

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**Key words:** anaphylaxis; cross-reactivity; jujube; latex.

Latex contains several allergenic proteins that can cross-react with proteins contained in many vegetables and fruits. In fact, there are numerous reports describing clinically relevant cross-reactions, so-called latex-fruit syndrome (1). We describe one case of life-threatening cross reactivity between latex and jujube (*Ziziphus mauritiana*).

A 25-year-old nurse was referred for asthma, rhinitis and hand dermatitis that had appeared about 1 year before, and progressively worsened. Symptoms were clearly related to the work environment,

therefore a diagnostic workup for latex allergy was started. Skin prick test with commercial extract evoked a  $8 \times 6$  mm wheal, the CAP-radioallergosorbent test (RAST) assay was 12.5 kU/l (class IV), and the glove test was positive as well. The spirometry was normal, but the methacholine challenge was moderately positive. The relevance of latex was documented by a reduction  $>30\%$  in the peak expiratory flow, occurring invariably when she was at work. The patient did not want to change her occupation, therefore a sublingual immunotherapy to latex (SLIT-Latex, Alk-Abellò, Italy) was instituted, associated with levocetirizine (5 mg/day), inhaled salbutamol, and inhaled steroids. Symptoms gradually improved in few months and after 1 year she was able to attend her usual tasks at the hospital, wearing latex gloves. Skin test reactivity decreased to  $4 \times 3$  mm, and RAST fell to 4.5 kU/l. In the last month she ate for the first time five jujube fruits, and after few minutes angioedema, generalized urticaria, asthma, and hypotension appeared. She was treated at the emergency unit with intravenous epinephrine and corticosteroids. A prick-to-prick with fresh jujube (no extract available) gave an intense cutaneous response of  $8 \times 7$  mm.

We performed an immunological study on serum after extracting Jujube fruits and latex sap as previously described

(2, 3). Patient's IgE reactivity to jujube and latex (at 1 mg/ml) was assessed by immunoblot on a 10% PAGE Bis-Tris gel (Prodotti Gianni, Milan, Italy). The resolved proteins were stained with 0.1% Coomassie Blue or transferred onto a nitrocellulose membrane. The membrane was saturated in TBS buffer containing 5% defatted dry milk, and incubated with patient's serum or control serum diluted 1 : 2. Bound specific-IgE were detected by an ECL western blotting kit (Amersham, Milan, Italy). In inhibition experiment serum was preincubated for 2 h with jujube or latex extracts before being tested against latex or jujube extracts.

Immunoblotting analysis showed a strong IgE-reactivity against a band of about 20 kD, present in both extracts (Fig. 1). Such band corresponds, in latex extract, to prohevein. A complete inhibition of the IgE-reactivity to latex was obtained when serum IgE were adsorbed onto the jujube extract (Fig. 1), but when latex was used as inhibitor, the IgE reactivity against jujube did not disappear (Fig. 1).

Jujube is a member of the rhamnales family, that is used in the preparation of cakes and jams or eaten fresh. There are only few reports of life-threatening reactions to jujube (4, 5), in all cases associated to latex allergy. In our patient, we confirmed the existence of a latex-jujube cross-reactivity, probably due to the

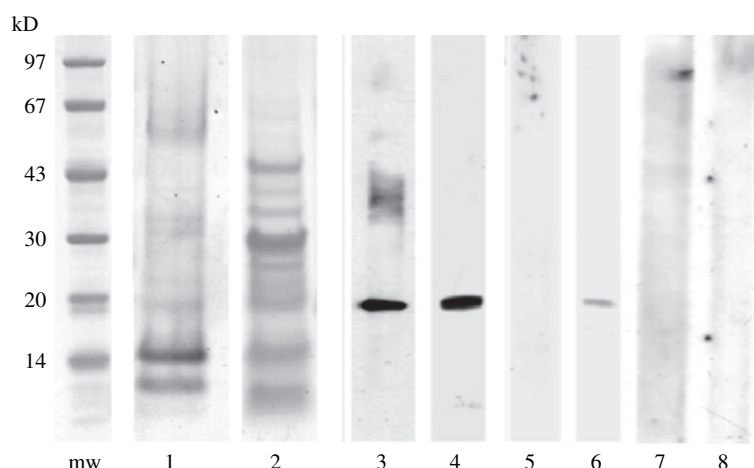


Figure 1. Lane 1 and 2, protein profile of jujube and latex extracts. Lane 3 and 4, IgE-reactivity of patient's serum against jujube and latex extracts. Lane 5, inhibition of IgE-binding on latex extract using jujube extract. Lane 6, inhibition of IgE-binding on jujube extract using latex extract. Lane 7 and 8, negative control sera on jujube and latex extracts.

presence of a 20 kD prohevein-like protein. In addition jujube extract displayed another component at about 20 kD that is different from prohevein-like one. Of note, the clinically documented protection against latex, achieved with immunotherapy, was not extended to jujube. It is therefore conceivable that the relevant cross-reacting proteins are not identical in the two allergenic sources. As the patient's serum before starting immunotherapy is no longer available, a more detailed investigation was not feasible.

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## Furazolidone induced nonpigmenting fixed drug eruptions affecting the palms and soles

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**Key words:** fixed drug eruption; furazolidone; nonpigmenting fixed drug eruption.

Nonpigmenting fixed drug eruption (NPFDE) is characterized with tender, symmetric erythema or plaque that disappears with no residue pigmentation. It always has a predilection site that involves the trunk, inguinal folds, buttocks and palms. The most common offending drug is pseudoephedrine. The NPFDE because of Furazolidone (FZD) is reported.

A 23-year-old man presented with recurrent erythemas at the same site on the palms and soles after administration with FZD within 3 years. Following pigmentary changes is not noted. The reappearance of typical lesions at the same site after oral challenge with 25 mg FZD together with the absent of pigmentation confirm the diagnosis of NPFDE. To the best of our knowledge, this is the first report of NPFDE caused by FZD involving both the palms and soles.

Furazolidone is a synthetic nitrofurant derivative that is an antibacterial and antiprotozoal agent. It is used in the treatment of giardiasis, trichomoniasis, cholera and other vibrio infections. The FZD has been reported to possess antihelicobacter activity and to have some ulcer-healing properties. Nausea and vomiting are the most common adverse effects of oral FZD therapy. In a small number of patients, hypersensitivity to FZD may cause angioedema, urticaria, erythema multiforme (1). Here we describe a Chinese man with a symmetric lesion of NPFDE on the palms and soles produced by FZD.

A 23-year-old man presented with red patches on both the palms and soles that

had been present for the previous 2 days. The rash had developed suddenly with redness and a slight itching sensation after he had taken a tablet of FZD (containing 100 mg) for acute intestinal infection. On examination, the round to oval, well-circumscribed bright-red macules distributed roughly in a symmetric manner on the palms and soles. The diameter ranged from 1 to 3 cm. There were no central blister and telangiectasis (Figs 1 and 2). Those lesions subsided spontaneously within 7 days without any residual hyperpigmentation. His medical history revealed suspected intake of FZD 100 mg twice on two occasions in the past 3 years. The rash had immediately developed 4 h after FZD treatment. The patient denied any other medicine usage. To incriminate FZD as the offender, oral challenge was performed with a intake of one-quarter of the single pharmaceutical dose of 100 mg FZD. And developed acute edematous erythemas over the previous lesions without subsequent pigmentary changes. The reappearance of typical lesions at the same sites after challenge in our patient together with the absence of pigmentation support the diagnosis of NPFDE because of FZD.

Fixed drug eruption (FDE) is a well defined, circumscribed, round or oval patches which varies in severity from a small, localized lesion to generalized involvement. The lesions can occur on any part of the skin or mucous membranes. The most common sites are the trunk, extremities, and genitalia. Recurrent eruption usually develops on the previously involved site 30 min to 8 h after administration of the offending drug (2). Hyperpigmented patches are the most common sequelae and tend to be more extensive and pronounced in people with brown skins. It lasts for months and becomes more pronounced after every recrudescence. There are some variations in shape like urticaria and dermatitis. Cellulites-like or erythema dyschromatosiformis-like fixed drug eruptions have also been reported as rare demonstrations (3). The diagnostic hallmark is its recurrence at previously affected sites after use of the same causative drugs.

The NPFDE is a rare demonstration of FDE. Only 16 cases have been reported

**Nonpigmenting fixed drug eruptions affecting the palms and soles is rare.**