

## Latex-Fruit Anaphylaxis from Persimmon

Panitan Pradubpongsa and Pinyapat Kanechorn-Na-Ayuthaya\*

Department of Dermatology, Phramongkutklao Hospital, Thailand

\*Corresponding author: Pinyapat Kanechorn-Na-Ayuthaya, 315 Rajavithi Road, Rajathevi District, Bangkok 10400 Thailand, Tel: +6623540378; E-mail: [jewenator@gmail.com](mailto:jewenator@gmail.com)

Received date: July 27, 2015; Accepted date: February 15, 2016; Published date: February 20, 2016

Copyright: © 2016 Pradubpongsa P, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

### Abstract

**Background:** Despite rare reports of persimmon anaphylaxis, the association of persimmon with natural rubber latex is low or undetermined, and latex-fruit syndrome presenting with anaphylaxis caused by persimmon has not been reported.

**Methods:** Allergy skin testing were performed for aeroallergens, persimmon and plant foods, including those implicated in the latex-fruit syndrome and local fruits. Results: Strongly positive prick by prick and skin prick tests reactions in response to persimmon fruit, plant foods with known cross-reactivity with latex and latex were demonstrated.

**Conclusion:** Our patient showed strongly positive allergy skin testing in response to persimmon fruit, specific plant foods with reported cross-reactivity with latex and latex. Although specific IgE for persimmon fruit and RAST inhibition latex immunoCAP are not available in our country We observed strongly positive reactions selectively towards the particular plant foods that contain class I chitinases, B-1,3-gluconase, profilin and patatin-like protein. Furthermore persimmon contains profilin, a cross reactive allergen to natural rubber latex. Total IgE was high and an IgE-mediated reaction was confirmed by immediate reactions.

**Keywords:** Latex-fruit allergy; Anaphylaxis; Persimmon; Profilin; Class I chitinase; Patatin-like

### Background

The latex-fruit syndrome is a cross-reactivity syndrome affecting approximately 30% to 50% of patients who have an allergy to natural rubber latex (NRL) and presenting with allergy to plant-derived food, especially to fruits such as avocado, banana, chestnut, kiwi, tomato and avocado [1]. The cross reactivity between NRL and various food allergens were established in 1994 by Blanco et al. based on the clinical observation of an unexpectedly high rate of fruit hypersensitivity in latex-allergic patients. Almost 50% of viewed cases showed hypersensitivity to one or more of these particular fruits, and approximately half of the reported episodes presented with systemic anaphylactic reactions [2].

Allergic reactions to persimmon fruit are uncommon with rare cases of anaphylaxis having been reported by M Prandini and JC Martinez [3,4]. There is another report of an anaphylactic reaction in an 8 year-old boy from persimmon fruit ingestion in a patient sensitized to pollens [5]. The association of persimmon (clinically or immunochemically) with natural rubber latex is low or undetermined, and latex-fruit syndrome presenting with anaphylaxis caused by persimmon has not been reported [6]. Here we present a case of anaphylaxis from persimmon in a woman with previous reactions to some tropical fruits and latex, confirmed by skin tests.

### Case Report

A 52 year old Thai woman was admitted at the emergency unit as a result of oral pruritus, generalized urticaria, nausea, vomiting and

breathlessness ending in syncope shortly after eating a persimmon. Treatment consisted of epinephrine, corticosteroids and antihistamines injections, and salbutamol inhalation, which provided full recovery. A few days later she developed similar symptoms but without syncope following intake of bananas. The patient's medical history revealed a past Cesarean section over two decades ago, chronic urticaria, asthma and rhinitis. Postnatally she recalled the first symptom of oral pruritus and swelling, from jackfruit intake and blowing balloons. The diet of the patient was otherwise normal since there had been no reaction with other foods. Complete physical examination was unremarkable. Allergy skin testing via SPT and prick by prick technique were performed for aeroallergens, and plant foods, including those implicated in the latex-fruit syndrome and exotic items found locally. Banana, persimmon, jackfruit, avocado, kiwi, potato, bell pepper, mango, papaya, tomato, cucumber, celery, orange, cherry, guava, apple and watermelon were tested, and results were as shown (Table 1).

Allergy skin prick by prick test results	
Allergen extract	Wheal size (mm)
Persimmon	10 × 12
Banana	15 × 28
Kiwi	18 × 20
Mango	12 × 12
Avocado	10 × 14
Papaya	10 × 10
Cucumber	10 × 10

Tomato	10 × 10
Potato	9 × 12
Bell pepper	8 × 18
Jackfruit	8 × 10
Garlic	8 × 8
Celery	6 × 8
Onion	5 × 8
Orange	4 × 4
Apple	4 × 4
Cherry	3 × 3
Guava	3 × 3
Watermelon	2 × 2

**Table 1:** Allergy skin prick by prick test results.

Allergy skin testing via SPT and prick by prick technique were performed for aeroallergens, and plant foods, including those implicated in the latex-fruit syndrome and exotic items found locally, however RAST inhibition latex immunoCAP was not done to determine the cross reactivity to latex because this investigation is not available in Thailand

On the other hand, prick test was negative for orange, cherry, guava, apple, and watermelon. Our patient was also highly sensitized to house dust, mites and Alternaria (Table 2). Total IgE was 778 kU/L but specific IgE for persimmon was not available.

Allergy skin prick test results	
Allergen extract	Wheal size (mm)
Negative control	2 × 2
Positive control	6 × 6
Mite	10 × 15
House dust	8 × 8
Alternaria	7 × 7
Aspergillus	5 × 5
Latex	6 × 10
Egg yolk	5 × 5
Soy bean	5 × 5
Tomato	5 × 5
Drechslera	4 × 4
Mixed smuts	4 × 4
Mosquito	4 × 4
Timothy	3 × 3
Paragrass	3 × 3

Lambsquater	3 × 3
Careless weed	3 × 3
Fusarium mixed	3 × 3
Candida	3 × 3

**Table 2:** Showing allergy skin prick test results.

## Discussion

Persimmon, or sharon fruit, is the fruit of the tree Diospyros kakis, common in the far east. There are few reports of allergic reactions to persimmons, and anaphylaxis to persimmon alone is rare. IgE-mediated reactions to persimmon are mentioned in the literature, although in the absence of latex sensitization association.

The recommended diagnostic test for fruit allergy is the scratch (prick) test with suspected fresh fruits in concordance with clinical history, which yields 80-90% of diagnostic sensitivity, depending on the fruit and the level of sensitivity of the patient [7,8]. Nonetheless SPT with commercial fruit extract is only 40% of diagnostic sensitivity, with exception of chestnut and kiwi, which reach a higher 80% [7].

Our patient demonstrated strongly positive prick test in response to persimmon fruit, specific plant foods with reported cross reactivity with latex (10 mm × 12 mm) and latex (10 mm × 6 mm) as shown (Table 1). A latex-fruit syndrome appears to involved in this case as supported by the prominent reactions towards the specific plant foods that contain class I chitinases, β-1,3-gluconase, profilin and patatin-like protein [1,9] (Table 3).

Plant foods implicated in the latex-fruit syndrome	
Type of fruit	Protein type
Avocado	Class I chitinase
Banana	Class I chitinase
Chestnut	Class I chitinase
Cherimoya	Class I chitinase
Passion fruit	Class I chitinase
Kiwi	Class I chitinase
Papaya	Class I chitinase
Mango	Class I chitinase
Tomato	Class I chitinase
Bell pepper	β-1,3-Glucanase, profilin
Potato	Patatin-like protein
Celery	Profilin

**Table 3:** Plant foods implicated in the latex-fruit syndrome.

Moreover persimmon contains profilin, a cross reactive allergen to NRL as confirmed by Anliker et al in NRL allergy [10]. Although specific IgE for persimmon fruit and RAST inhibition latex immunoCAP were not available in our country, an IgE mediated mechanism was supported by immediate positive skin reaction.

Comparably to the case reported by Prandini [3], our patient was also sensitized to house dust, mites and *Alternaria*.

Hereby we present a case of latex-fruit syndrome caused by persimmon. Our findings are confirmed by positive skin tests to persimmon fruit, latex and plant foods that cross react with NRL. Increasing age, additional sensitization to ubiquitous inhaled allergens, and enhanced total serum IgE values seemed to be underpinning elements intriguing latex sensitization and further sensitization to the latex-associated foods [11]. We informed the patient to avoid persimmon, in addition to plant foods and substances that were tested positive (especially those known to be associated with latex-based Hevea proteins), and provided an epinephrine autoinjector for pre-hospital treatment of anaphylaxis in case of an emergency.

## References

1. Wagner S, Breiteneder H (2002) The latex-fruit syndrome. *Biochem Soc Trans* 30: 935-940.
2. Blanco C, Carrillo T, Castillo R, Quiralte J, Cuevas M (1994) Avocado hypersensitivity. *Allergy* 49: 454-459.
3. Prandini M, Marchesi S (1999) Anaphylaxis to persimmon. *Allergy* 54 : 897.
4. Martinez JC, Armentia A, Bartolome B, Callejo A, Fuentes MJ, et al. (2001) Anaphylaxis after ingestion of sharon fruit. *Allergol Immunopathol* 29 : 69-71.
5. Rodriguez-Jimenez B, Nunez Acevedo B, Ledesma A, Cava-Sumner B, Kindelan-Recarte C, et al. (2015) Anaphylaxis in a child after ingestion of persimmon. *J Invest Allergol Clin Immunol* 25: 142-144.
6. American Latex Allergy.
7. Blanco C (1997) *Alergia al látex*. Tesis Doctoral Universidad de Las Palmas de Gran Canaria
8. Delbourg MF, Guilloux L, Moneret-Vautrin DA, Ville G (1996) Hypersensitivity to banana in latex-allergic patients. Identification of two major banana allergens of 33 and 37 kD. *Ann Allergy Asthma Immunol* 76: 321-326.
9. Blanco C, Diaz-Perales A, Collada C, Sanchez-Monge R, Aragoncillo C, et al. (1999) Class I chitinases as potential panallergens involved in the latex-fruit syndrome. *J Allergy Clin Immunol* 103: 507-513.
10. Anliker MD, Reindl J, Vieths S, Wuthrich B (2001) Allergy caused by ingestion of persimmon (*Diospyros kaki*): detection of specific IgE and cross-reactivity to profilin and carbohydrate determinants. *J Allergy Clin Immunol* 107: 718-723.
11. Tucke J, Posch A, Baur X, Rieger C, Raulf-Heimsoth M (1999) Latex type I sensitization and allergy in children with atopic dermatitis. Evaluation of cross-reactivity to some foods. *Pediatr Allergy Immunol* 10: 160-167.