

# Allergic reaction after ingestion of orange blossom pollen

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**Abstract.** A 31-year-old atopic subject with allergic rhinoconjunctivitis with sensitization to several pollens, presented with urticaria and angioedema after ingestion of orange blossom pollen (*Citrus sinensis*). A positive skin prick test for orange blossom pollen extract (BIAL-Aristegui, Bilbao, Spain) at a concentration of 1.2 mg/ml was obtained. Serum specific IgE antibodies to orange blossom pollen were shown (Unicap Pharmacia System, Uppsala, Sweden). A conjunctival provocation test was negative with orange blossom pollen extract dilutions of 1:1000, 1:100 and 1:10 w/v.

We describe a patient with an IgE-mediated reaction caused by hypersensitivity to orange blossom pollen. Although the pollen is an aeroallergen and the way of sensitization and entrance is the airway, and therefore the symptoms appear in this location, when contact is through some other route such as the digestive tract, it is also able to sensitize reporting urticaria and angioedema like in our case, instead of respiratory symptoms.

**Keywords:** Orange blossom, oral allergy.

**Resumen.** Paciente atópico de 31 años de edad con rinoconjuntivitis alérgica por sensibilización a varios pólenes, que presentó urticaria y angioedema tras la ingesta de polen de azahar (flor de naranjo, *Citrus sinensis*). Se observó positividad en el prick test con extracto de polen de azahar (BIAL-Aristegui, Bilbao, España) a una concentración de 1.2 mg/ml. Se detectó IgE-específica sérica frente a polen de azahar (Unicap Pharmacia System, Uppsala, Suecia). La prueba de provocación conjuntival fue negativa con diluciones de extracto de polen de azahar de 1:1000, 1:100 y 1:10 p/v.

Presentamos el caso clínico de un paciente con una reacción IgE-mediada por hipersensibilidad a polen de azahar. Aunque el polen es un aeroalérgeno y la vía de sensibilización y entrada es la vía respiratoria y, por lo tanto, los síntomas aparecen a este nivel, cuando el contacto se produce por otra vía, como el tracto digestivo, también puede sensibilizar y dar lugar a urticaria y angioedema (como en este caso), en lugar de síntomas respiratorios.

**Palabras clave:** polen de azahar, alergia oral.

## Introduction

Although the ways of sensitization can be several, aeroallergens usually sensitize by airway. When the sensitized patient contacts with the allergen by any way you expect that the patient presents clinical manifestations but this is not always the case. Indeed, this fact depends on the way of sensitization. A clinical case of a patient with sensitization to a pollen that presents cutaneous symptoms and not rhinoconjunctivitis with allergen contact by digestive tract and not by ocular contact is described.

## Case report

A 31-year-old patient with antecedents of allergic rhinoconjunctivitis with sensitization to *Parietaria judaica*, *Platanus hybrida*, *Artemisia vulgaris*, *Cupressus arizonica*, *Cupressus serpemvirens* and *gramineae* sp. pollen, reporting immediate facial edema and widespread wheals with pruritus ten minutes after the ingestion of orange blossom (*Citrus sinensis*) pollen eaten directly from the flowers of orange blossom. The clinical manifestations resolved within hours spontaneously without showing oral or digestive symptoms. The patient

presented tolerance to orange fruit and other citrus fruits after this episode.

## Material and methods

Skin prick tests were performed according to the Subcommittee on Skin Tests of the European Academy of Allergology and Clinical Immunology. We made prick test with orange blossom pollen (BIAL-Aristegui, Bilbao, Spain) with reading at 20 minutes. Histamine hydrochloride at 10 mg/ml and 0.9% saline solution were used as positive and negative controls, respectively.

Twenty healthy non-atopic and atopic subjects served as controls for the prick test. We measured serum specific IgE of orange blossom pollen (Unicap Pharmacia System, Uppsala, Sweden) as well as total IgE.

Conjunctival challenges were conducted using extracts of orange blossom pollen (BIAL-Aristegui, Bilbao, Spain) with dilutions of 1:1000, 1:100 and 1:10 w/v.

A double-blind placebo controlled challenge test was not performed because the patient refused it.

## Results

The prick test was positive with orange blossom pollen with a wheal of 8 mm. The wheal with histamine was also of 8 mm and the control with saline solution was negative. The prick test in all the healthy controls used was negative too.

The serum specific IgE of orange blossom pollen was of 3.17 kUA/L and the total IgE 1066 kU/l.

The conjunctival provocation test was negative with orange blossom pollen extract dilutions of 1:1000, 1:100 and 1:10 w/v.

## Conclusion

Both the clinical history and the results of the explorations are compatible with an IgE-mediated allergic reaction to orange blossom pollen.

## Discussion

Orange blossom is the flower of the genus *Citrus sinensis*, a tree of the family Rutaceae (subclass Rosidae, order Sapindales) without taxonomic relationship with the pollen the patient is sensitized to. Other Rutaceae are grapefruit (*Citrus grandis*), lemon (*Citrus limon*), lime (*Citrus limetta*) and tangerine (*Citrus nobilis*).

Allergy to orange has been largely described in the literature [1-4], but there are no clinical reports of allergy reaction to the pollen of this tree.

We present a clinical case of urticaria-angioedema after ingestion of pollen. The presence of positive skin prick test with orange blossom pollen and the detection of serum specific IgE are compatible with a mechanism of type I hypersensitivity. Although the pollen is an aeroallergen and the way of sensitization and entrance is the airway, and therefore the symptoms appear at this localization, when contact is by some other route, such as the digestive tract, it is also able to sensitize reporting urticaria and angioedema like in our case, and not respiratory symptoms.

We have found a study [5] carried out in some native Americans that presented respiratory and oral symptoms after eating corn pollen (*Zea mays*), different from our patient who only presented cutaneous symptoms.

Thus, we think that our patient was sensitized by the digestive tract and only presents clinical manifestations when contact with the allergen is via this route.

## References

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