



## ALLERGY TO GREEN PEPPER: A CASE REPORT OF ANAPHYLAXIS

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### ABSTRACT

**Case Report:** We present a 39-year-old nonatopic woman that in December 2016 after eating a seafood paella with green pepper immediately presented asthenia, nasal obstruction, facial erythema, incoercible vomiting and diarrhea. She was attended in an emergency service and treated with received treatment with adrenaline, dexchlorpheniramine and methylprednisolone. Later she ate a grilled loin sandwich in a bar and she had the same symptoms in a few minutes (she asked the waiter at the bar and the chef had cooked her sandwich in the same pan where he had cooked green pepper just before). After that, she suffered from abdominal pain, nausea, abdominal distension without diarrhea two hours after she ate an omelet sandwich with certain flavor of green pepper. At present even the casual smell of pepper causes her nausea. The woman eats everything including spices and just avoids pepper. **Methods:** Skin prick tests were performed using extracts from food (nuts, fish, mollusk, fruits, vegetables, legumes), aeroallergens (mites, pollens and epithelia) and purified proteins (Pru p 3, profilin, polcalcin, alfalactoalbumin, betalactoglobuline, casein). We also performed prick by prick to raw and cooked green pepper. SDS-PAGE immunoblotting according to Laemli under reducing conditions (with 2-mercaptoethanol) was performed to study the molecular mass of the IgE-reactive proteins. Extracts from green pepper and green pepper seed were used. **Results:** The prick tests were all negative and the prick by prick test to raw and cooked green pepper was positive in both cases. The immunoblotting showed IgE binding bands of 80 kDa, 67 kDa and 55 kDa with the green pepper extract, and 68 kDa and 29 kDa bands with the green pepper seed extract. **Conclusions:** We present a case of anaphylaxis by green pepper ingestion. IgE-reactive proteins from green pepper and green pepper seed were detected. The patient signed a written informed consent for presentation and publication of the case report.

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### INTRODUCTION

Bell pepper (*Capsicum annuum*) is a species belonging to the family of Solanaceae like tomatoes, potatoes, eggplant and so on. This family is native of Central America and northern South America. Food allergy to some spices is frequent [1], but there are few cases of food allergy to bell peppers [2,3]. Some cases of occupational allergy to bell pepper pollen in workers have been described [4,5,6].

### CASE REPORT

We present a 39-year-old nonatopic woman that in December 2016 after eating a seafood paella with green pepper immediately presented asthenia, nasal obstruction, facial erythema, vomiting and diarrhea. She was attended in an emergency service and treated with received treatment with

adrenaline, dexchlorpheniramine and methylprednisolone. Later she ate a grilled loin sandwich in a bar and she had the same symptoms in a few minutes (she asked the waiter at the bar and the chef had cooked her sandwich in the same pan where he had cooked green pepper just before). After that, she suffered from abdominal pain, nausea, abdominal distension without diarrhea two hours after she ate an omelet sandwich with certain flavor of green pepper. At present even the casual smell of pepper causes her nausea. The woman eats everything including spices and just avoids red and green pepper. She refused the red pepper oral challenge.

### MATERIAL AND METHODS

Skin prick tests were performed using commercial extracts (Leti, Madrid, Spain for food and Roxall, Bilbao, Spain for aeroallergens and purified proteins). We performed prick tests with extracts from food (egg white, egg yolk, wheat, corn, rice, almond, hazelnut, peanut, mustard, tuna, hake, squid, prawn, strawberry, peach, apple, banana, kiwi, melon, lettuce, green

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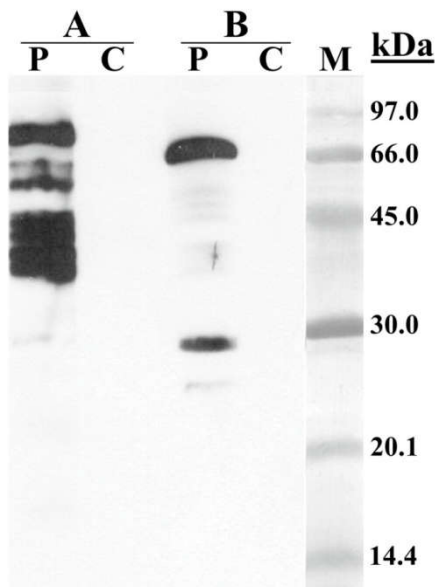
beans, tomato, onion, chickpea, lentils), latex, Anisakis sp, aeroallergens (mites, pollens and epithelia) and purified proteins: Pru p 3 (LTP protein), Pho d 2 (pollen profilin), polcalcin, alfalactoalbumin, betalactoglobuline, casein. We also performed prick by prick to raw and cooked red and green pepper. Hydrochloride histamine 10 mg/mL and 0.9% saline were used as positive and negative controls, respectively.

## RESULTS

The prick tests were all negative and the prick by prick test to raw and cooked green pepper was positive in both cases and negative for red pepper.

Total IgE was 66.4 U/mL and basal tryptase was 3.41 µg/l. Protein extracts from green pepper and green pepper seeds were prepared by homogenization in phosphate-buffered saline (15% w/v), dialyzed, and lyophilized (Roxall, Bilbao, Spain). The extracts were analyzed by sodium dodecyl sulfate-polyacrylamide gel electrophoresis (SDS-PAGE) in reducing conditions as described by Laemmli [7] showing protein bands ranging from 90 kDa to 10 kDa in green pepper, and green pepper seed extracts. SDS-PAGE IgE immunoblotting assays with both extracts and the patient serum was performed to study the molecular mass of the IgE-reactive proteins.

The immunoblotting showed IgE binding bands of 80 kDa, 67 kDa and 55 kDa, and a broad band between 45 – 34 kDa with the green pepper extract, and 68 kDa and 29 kDa bands with the green pepper seed extract (Figure 1).



**Figure 1** SDS-PAGE Immunoblotting. A) Green pepper extract; B) Green pepper seed extract. Lane P: patient sera; Lane C: control serum (pool of sera from non atopic subjects); Lane M: molecular mass standard.

## DISCUSSION

Since 1996, Sastre *et al* described occupational asthma by spices [4], until today there are several papers in which contact dermatitis [5] or rhinoconjunctivitis are published in relation to the cultivation of *Capsicum annuum* [6].

Rüger *et al* reported in 2010 a severe anaphylaxis after bell pepper intake in a patient who was sensitized to birch and grass and they described a 11 kDa protein which could correspond to a fragment of Bet v 1 homologous [2].

Caballero *et al* published a case of anaphylaxis with red bell pepper [3] Nevertheless, the patient whom they describe was sensitized to pollens, and skin test and immunoblotting were only positive for red pepper but not for green pepper in contrast with the patient referred by García-Menaya *et al* in 2014 whom presented an anaphylactic reaction to bell pepper (*Capsicum annuum*) but she always had a latex-fruit syndrome [8]. This was the first patient described with anaphylactic reactions to raw green peppers and paprika in the context of a latex-fruit syndrome in a patient without pollen allergy.

In our case, the patient presented anaphylactic reactions to raw and cooked green peppers but she tolerates all spices and she has no other sensitization to food or pollen. The immunoblotting showed IgE binding bands of 80 kDa, 67 kDa and 55 kDa with the green pepper extract, and 68 kDa and 29 kDa bands with the green pepper seed extract. We do not know the identity of these proteins, but probably they triggered the allergic reaction by intake of green bell peppers and more studies are necessary for their characterization.

In a conclusion we present a case of anaphylaxis by green pepper ingestion. IgE-reactive proteins from green pepper and green pepper seed were detected.

The patient signed a written informed consent for presentation and publication of the case report.

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