

Avocado allergy. Identification of a new allergen

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This article has been accepted for publication and undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the Version of Record. Please cite this article as doi: 10.18176/jiaci.0846

Key words: Food allergy. Avocado. Allergen.

Palabras clave: Alergia alimentaria. Aguacate. Alérgeno.

Persea americana, is a tree that belongs to the *Lauraceae* family, whose fruit, the avocado, is an edible fruit.

Avocado consumption is increasing worldwide, mainly due to healthy benefits as cardiovascular health, weight loss, cognitive function and colonic microbiota health [1]. There are many types of avocado and the most consumed is Hass avocado variety; other types of avocado are strong, bacon, reed, and russell avocado, among others.

To date, there are few published cases of avocado hypersensitivity in the literature [2,3], the most of them described related to latex-fruit syndrome [4].

We report a case of a 41-year-old male, with no relevant medical history, who presented intense pharyngeal and ear itching after ingestion of hass avocado. Symptoms disappeared in one hour without requiring treatment. No reactions with latex or other fruits were documented.

Skin prick tests (SPT) to a commercial extracts (peach nsLTP, palm profilin, latex, oak and birch pollen), (ALK- Abelló) were all negative. Prick by prick testing with hass avocado was positive (10 mm). Serum Specific-IgE (ImmunoCAP®, ThermoFisher Scientific) was 2.93 KU_A /L to avocado and 0.05 KU_A /L to latex.

Protein concentration of hass and strong avocado extracts were measured according to the Bradford method (Bradford MM. Anal Biochem 1976; 72:248-54). Both extracts were analyzed by SDS- PAGE under reducing conditions (2-mercaptoethanol) according to Laemmli (Laemmli UK, Nature 1970; 227:680-5). The immunoblotting assay revealed an IgE reactive band of approximately 50 kDa in both hass and strong avocado extracts (Figure).

The 50 kDa band was excised, digested with trypsin and analyzed by mass spectrometry using Matrix-Assisted Laser Desorption/Ionization-Time-Of-Flight mass spectrometry (MALDI- TOF MS). Proteins were identified by searching a non-redundant protein sequence database (NCBI). According to the Mascot program, the 50 kDa was identified as a endo 1, 4 β -glucanase (with a score of 94 and a protein sequence coverage of 28%).

Isolated cases of avocado hypersensitivity are rare, majority of them in relation to latex-fruit syndrome. Few avocado allergens had been identified in the allergen database allergome (<http://www.allergome.org>): Pers a 1, a class 1 endochitinase, implicated in latex-fruit syndrome [5] and a Pers a 4, a profilin [6]. Other proteins have been observed in avocado [7]: 1,3 β -glucanase, thaumatin-like protein, isoflavone reductase like protein. None of them have been described as an allergen in allergome database before.

1, 4 β -glucanase is an enzyme implicated in the ripening process of avocado [8].

We report a case of a patient with IgE-mediated allergy to avocado with a endo-1, 4 β -glucanase as the only allergen involved, not previously described. We have not found differences in the immunoassays realized between the two types of avocado. To our best knowledge, this is the first case reported of avocado allergy due to this protein.

Funding

No financial sources.

Conflict of interest

None.

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FIGURE

Figure. M: Molecular weight marker. 1: strong avocado + NET gel. 2: strong avocado + control serum. 3: strong avocado + patient serum. 4: hass avocado + NET gel. 5: hass avocado + control serum. 6: hass avocado + patient serum.

