

Avocado Allergy: Identification of a New Allergen

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Persea americana is a tree belonging to the Lauraceae family, whose fruit, the avocado, is edible.

Avocado consumption is increasing worldwide, mainly owing to its benefits for cardiovascular health, weight loss, cognitive function, and colonic microbiota health [1]. There are many types of avocado, and the most widely consumed is the Hass variety. Other types of avocado include the Fuerte, Bacon, Reed, and Russell varieties.

Few cases of avocado hypersensitivity have been reported in the literature [2,3], and most have been related to latex-fruit syndrome [4].

We report the case of a 41-year-old man with no relevant medical history who presented with intense pharyngeal and ear itching after ingestion of Hass avocado. His symptoms disappeared in 1 hour without treatment. No reactions with latex or other fruits were documented.

The results of skin prick testing (SPT) with a commercial extract (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 concentrations of the Hass and Fuerte 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 the Hass and the Fuerte avocado extracts (Figure).

The 50-kDa band was excised, digested with trypsin, and analyzed using matrix-assisted laser desorption/ionization-time-of-flight mass spectrometry. Proteins were identified by searching a nonredundant protein sequence database (National Center for Biotechnology Information). According to the Mascot program, the 50-kDa protein was identified as

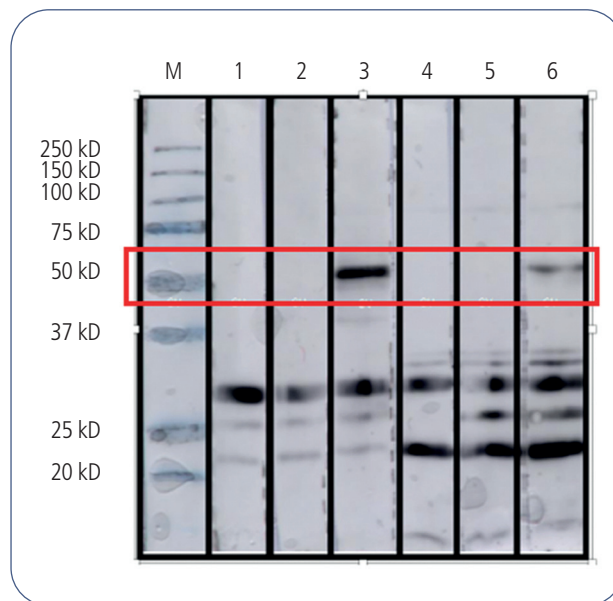


Figure. Immunoblotting assay. M indicates molecular weight marker. 1, Fuerte avocado + NET gel; 2, Fuerte avocado + control serum; 3, Fuerte avocado + patient serum; 4, Hass avocado + NET gel; 5, Hass avocado + control serum; 6, Hass avocado + patient serum.

an endo-1,4 β -glucanase (with a score of 94 and a protein sequence coverage of 28%).

Isolated cases of avocado hypersensitivity are rare, and most are associated with latex-fruit syndrome. The few avocado allergens identified in the Allergome allergen database (<http://www.allergome.org>) include Pers a 1, a class 1 endochitinase that is implicated in latex-fruit syndrome [5], and Pers a 4, a profilin [6]. Other proteins that have been identified in avocado [7] include 1,3 β -glucanase, a thaumatin-like protein, and an isoflavone reductase-like protein. None of these have previously been included in the Allergome database.

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

We report the first case of IgE-mediated allergy to avocado with an endo-1,4 β -glucanase as the only allergen involved. We found no differences between the 2 types of avocado in the immunoassays performed. To our knowledge, this is the first report of avocado allergy due to this protein.

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Conflicts of Interest

The authors declare that they have no conflicts of interest.

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ERRATUM:

Response to Monoclonal Antibodies in Asthma: Definitions, Potential Reasons for Failure, and Therapeutic Options for Suboptimal Response

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The figure below replaces Figure 4 of the review article.

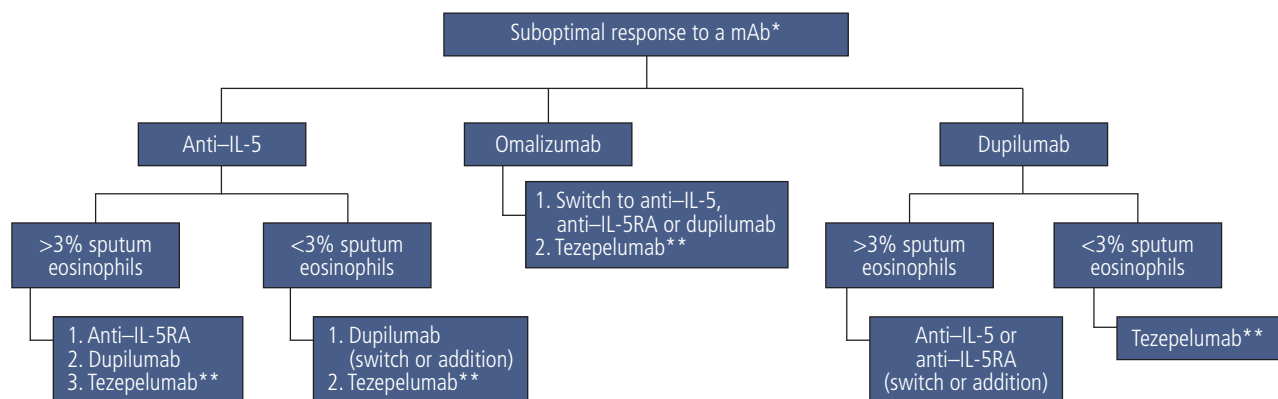


Figure 4. Therapeutic options in cases of suboptimal response to mAbs. No order of preference is indicated, except if there is a numbered list. mAb indicates monoclonal antibody; OCS, oral corticosteroids. *In the case of a suboptimal response to a mAb, determine whether it is due to infection or uncontrolled inflammation. In the case of infection, consider adding azithromycin or switching to another mAb. In the case of inflammation, the recommendation is to follow the algorithm. **Tezepelumab is not indicated in patients receiving maintenance OCS. In addition, there is no experience with failure of other mAbs.