Identity of allergen responsible for durum wheat allergy is unveiled

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An international team of researchers, in which a researcher from Universidad Politécnica de Madrid is involved, has identified one of the main causes of food allergy in the Mediterranean area.

Recently, a research team led by Dr. Araceli Díaz Perales from Centre for Plant Biotechnology and Genomics (CBGP, UPM-INIA), in collaboration with other international research groups, has contributed to the identification of Tri tu 14, a new allergen detected in durum wheat.

Durum wheat is very popular and is used to make pasta, pizza, bulgur, semolina and couscous. The identification of new allergens may improve the processes of diagnosis, and thus the quality of life in patients with this food allergy.

Wheat is the most widely consumed grain worldwide. Diverse varieties exist, but common wheat and durum wheat are the two most widely-used cereals. Wheat is a known source of natural allergens and is able to induce two type of different response.

Firstly, wheat is involved in the development of baker's asthma, an allergic pathology that mainly affects workers who are continuously in contact with flour through inhalation. Secondly, allergies may also appear due to ingestion of wheat.

However, despite the seriousness of the symptoms associated with these pathologies, many patients with food allergy to wheat are not properly diagnosed. So far, diagnosis is based mainly on detecting the presence of antibodies that signal allergens obtained from the common wheat variety, which is the one principally responsible for baker's asthma. As a result, patients allergic to durum are not properly diagnosed.

In order to determine the allergens related to durum wheat, a team of international researchers undertook a research study headed by Dr. Araceli Díaz Perales. Dr. Díaz is a researcher from CBGP, a joint center from Universidad Politécnica de Madrid (UPM) and the National Institute for Agricultural Research and Experimentation (INIA).

After months of work, the researchers finally identified the allergen Tri tu 14, which belongs to a family of lipid transport proteins of high resistance to both gastric digestion and heat treatment. These proteins are not only responsible for the main food allergy in the Mediterranean area but also responsible for more severe reactions such as anaphylaxis.

The relevance of this allergen for a population of patients allergic to wheat was also assessed in the study. The trials carried out by researchers show how the new allergen is able to explain the cases of patients allergic to wheat by ingestion who currently lack a proper diagnosis. In this way, Dr. Díaz Perales says "the finding of this allergen and the obtained results will allow us to use this protein as a marker to determine the presence of wheat-mediated food allergy."

The discovery of new allergens that can aid in detecting allergic pathologies is directly related to the improvement of diagnosis of the patient. The inclusion of these new markers will help diagnose patients lacking a reliable diagnosis so far, thus improving their quality of life. According to the researchers involved in the study, this finding will help doctors make decisions for prescribing effective treatments and advising patients.

More information: Hela Safi et al. Identification and molecular characterization of allergenic non-specific lipid-transfer protein from durum wheat (Triticum turgidum), *Clinical & Experimental Allergy* (2018). DOI: 10.1111/cea.13271

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