

# **Selected panalergens in plant food**

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## Abstract

Allergy affects more and more people in the world, it has gained the name of a disease of civilization, and the 21st century is called the century of the allergy epidemic. An allergy to fruit and vegetables is a big challenge for doctors, nutritionists and patients. Spice plants also belong to this group of allergenic, little studied types of food. We are looking for solutions aimed at breeding varieties with reduced allergenicity or using technological processes that reduce the allergenicity of a food product. Hence, it is necessary to know the allergen content of various food products. Most often they sensitize fruit of the genus *Rosaceae*, among vegetables - plants of the genus *Apiaceae*, which also includes some spice plants. The most common causes of allergic reactions to vegetables and fruits are proteins, causing cross-reactions with proteins found in pollen of commonly growing plants: trees, especially birch and mugwort. This is due to the very similar structure of the proteins responsible for the allergic reaction. In the case of fruit and vegetable allergens, there are four panallergens: Bet v 1 homologs of birch pollen, homologs of thaumatin-like proteins, LPT-transfer proteins, and profilins. In our geographical area, two of them are of the greatest importance: homogi Bet v 1 and profiliny.

The aim of this study was to analyze the allergen content in selected food groups, compare the allergen content in the samples and develop enzyme immunoassays for the determination of Bet v I homologues and profilin homologs in food of plant origin, i.e. herbs from the *Lamiaceae* family (basil, oregano) and *Apiaceae* (caraway seeds), dill, parsley, anise, coriander) as well as fruits (raspberries, cherries, blueberries, strawberries), in spice mixtures, vegetables, both in fresh products and processed foods. The compounds tested came from conventional and organic crops harvested over the years. The protein content and the content of Bet v 1 analogues and profilin in the extracts of the samples were determined by indirect enzyme immunoassay.

After verification of the methods of protein isolation, the best method turned out to be the Total extraction protein test, and the method for its determination was the Pierce method.

The results of the determination of Bet v 1 analogues obtained using the commercial test are higher than the results obtained with the indirect Elisa test for Bet v 1 analogues, but between these results there is a noticeable proportionality, which is also evidenced by the values of the correlation coefficients. A method for determining profilins in herbal plant samples has been developed. The content of Bet v 1 allergens and Bet v 2 homologues in samples of organic herbs is lower than in samples grown using conventional methods. The research shows that the cultivation method and the fruit variety are important in the allergen content of the tested samples. Of particular note is that organically grown fruit contained a lower level of Bet v 1, which means that allergy sufferers can use this information on organically grown foods. The results obtained after the simulation of digestion confirm the information about the lability of proteins, and thus the extinction of their allergenicity.