

HOW MUCH THE TRANSGENESIS AFFECTS THE ALLERGENICITY?

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Food allergy is an adverse reaction to food and represents an important public health problem.

For allergic people low amounts of a food, that is well tolerated by the majority of the population, can cause serious symptoms and even death. The prevalence of food allergy is not well established, but is estimated to be around 6% in young children and 3% in adults. Hypersensitivity reaction to wheat flour occurs by inhalation (baker's asthma) and ingestion (food allergy and celiac disease), but may also develop by contact in some cases.

The responsible allergens of wheat allergy are proteins accounting for about 10-15% of the grain dry weight. Wheat proteins are classically divided into two main groups: the salt soluble fraction (albumins/globulins) and the prolamins. This latter fraction is responsible for celiac disease and also for food allergy. The albumins/globulins fraction has also been reported to contain IgE-binding proteins. Since allergies seem increasing, much attention is now being focused on foods from genetically modified (GM) plants because of the postulated risk of allergenicity. In Europe, there is a considerable public resistance to the use of GM technology for crop improvement. This resistance includes the perception that the insertion of transgenes into host plant genomes may result in unpredicted effects on the expression of other genes and effects on plant phenotype (e.g. increases in toxins and allergies). If it is true, transgenic crops could not be considered "substantially equivalent" to non-GM crops.

In order to understand if there is a substantial difference in the accumulation of allergenic proteins in GM wheats (not commercial), sera from children and adults with clinically documented wheat allergy are used for a comparison between a GM-wheat and its wild-type counterpart. The investigation is focused mainly on the soluble protein fraction of wheat. For the comparison, ELISA test and 2D immunoblot are used. Data show that there is no significant difference in the amount of allergenic polypeptides present in the salt-soluble fraction between the GM genotype and its non-transformed counterpart, as well as in the commercial genotype here considered. For comparison, other GM lines have also been analysed.