

Allergenic risk from novel plants is very important and difficult to predict

To the editor

The May issue of the JACI featured an interesting and important article by Steve Taylor and Susan Hefle¹ on the subject of the allergenic risks of genetically modified (GM) foods. However, the authors seem not to have paid sufficient attention to the potential impact of allergenic risks posed by novel plants, including GM ones. The seriousness of the worst-case scenario, in which a modified basic food staple is accidentally engineered to contain an allergen with a potency equal to that of peanut allergens, is obvious. Milder scenarios can be hypothesized, though it must be noted that the most important food crops—corn, soybean, potato, and (soon) wheat—are in fact those most often genetically modified. Moreover, even if the health burden is limited, the economic disruption and management problems can be huge—a fact that the authors do not fully describe.

The StarLink episode has had a significant impact on the entire grain industry and has also affected US corn exports.² More disconcerting is the fact that after 7 months of efforts to eliminate StarLink contamination of grain (as of April 2001), 10% of the samples were still testing positive at elevators (J. Giller, e-mail communication); the extent of seed contamination and StarLink volunteer corn (due to cross-pollination) is still difficult to estimate. Given this experience, removal of novel allergens from the food supply could be extremely costly and difficult.

In addition, the authors do not address the issue in the context of risk assessment. Risk assessment is the approach that was used in the case of StarLink by the US Environmental Protection Agency³ and that is standard for environmental hazards: uncertainties are more evident in the assessing of risks, and risk reduction, a management activity, is separate from the scientific process of risk assessment. In this instance, perhaps as a consequence, the difficulties and uncertainties in estimating the allergenic risks, though they were noted by the authors, are not highlighted; they include uncertainties in the identification of allergenic proteins and the determination of thresholds and dose responses for new products, in the relevance of different exposure pathways (allergenic risk could come not just from foods but also from pollen of GM plants or from dermal exposure to products derived from those plants), and in the adequacy of exposure assessment methods used for other risks in this context.

Sequence homology seems to raise more problems than are discussed; among other things, new, unrelated-by-sequence allergens are regularly discovered. It should be noted that the proteins in GM plants often belong to protein families not present in any food (ie, there has been no previous human exposure); accordingly, for any family-level analysis

(functional or sequence), there might be little information on the basis of which to make judgments.

Assessing allergenic risk remains a difficult and important task that requires broad scientific input. The experience from food safety crises in Europe suggests that misplaced confidence can hinder scientific inquiry and result in a loss of public trust in scientists and regulators. Of even more relevance to allergists is the following question: if we had had good risk methods for predicting allergenic risk (and had used them), would we have not been able to prevent much latex allergy?

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