

OPTIMAL HEALTH UNIVERSITY™

Presented by Dr. Joseph Baker

Genetically Modified Food

An increasing number of genetically modified (GM) fruits and vegetables are making their way into the global marketplace and onto your family's table — everything from this morning's oranges to tonight's potato salad.

The transition from the chemist's lab to the checkout lane hasn't gone without raised eyebrows, however. Dr. Baker, like many other health-care professionals and researchers, is concerned about the potential for unknown side effects.



According to researchers in California, "The implementation of the technology of genetic modulation of food plants has led to considerable fear, controversy, and confusion as the understanding of the technology is poor in the general population." (*J Pediatr Gastroenterol Nutr* 2002;35:475-86.)

The production of GM and bioengineered foods is increasing at a break-neck pace. And so have the fears and concerns surrounding these crops. That's why Dr. Baker has decided to take a closer look at this controversial issue in this week's *Optimal Health University®* handout.

What Is a GM Food?

The first GM food — the FlavrSavr tomato — made its debut in U.S. produce aisles in 1994. Two years later, GM crops began appearing in other countries.

The terms genetically modified (GM), genetically engineered (GE), bioengineered and transgenic all refer to a food that's been altered to increase its growth rate, resistance to insects, flavor or visual appeal.

How are GM foods created? "Selected host genes or genes identified from other plants or non-plant sources are modified or transferred to a crop plant." (*Mutat Res* 2003;544:217-21.)

What We Don't Know About GM Foods

Dr. Baker is concerned that the long-term effects of GM foods have not yet been established, particularly as they relate to children.

"Changes in food production and dietary practices are occurring faster than our understanding of their potential impact on children's health." (*J Pediatr Gastroenterol Nutr* 2002;35:475-86.)

Concerns include whether or not genetically engineering foods will:

- ✓ Turn a once allergy-safe food into an allergy-inciting one
- ✓ Alter the way the food is metabolized by the body
- ✓ Deplete the food's nutritional composition

- ✓ Create "super bugs" due to development of crops that are resistant to pests and weeds
- ✓ Permanently alter the soil, by depleting its nutrients
- ✓ Allow the use of highly toxic pesticides and herbicides, which are not tolerated by regular crops, and which may harm people, as well as the environment
- ✓ Create mutant strains, which are harmful to the body or overtake adjacent crops

Not Living up to the Hype

The multimillion-dollar corporations behind GM foods claim that their objective is to create a strain of "super crops" that will help end world hunger.

However, "despite the progress that has been made, the world food situation is still marked by mass hunger and chronic malnutrition."



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Worse yet, researchers note that GM foods “have primarily benefited large farms and multinational companies in industrialized countries” — not the underprivileged regions they were supposedly developed to assist (*Riv Biol* 2003;96:363-84).

This high-tech process also has a high price tag for the farmers who choose to use it, making it too expensive for those in poorer countries to adopt.

Less Nutritious

Although the mega-corporations behind the GM revolution claim that the purpose of genetically altering foods is to create more nutritious crops, that isn't what is taking place. Instead, crops are being bred to produce more yield so that they are more profitable. Agricultural scientists explain that this process inherently *depletes* the crops' nutritional value.

According to University of Texas at Austin biochemist Dr. Donald Davis, who has extensively researched GM foods, “There have been intensive efforts to breed new varieties that have greater yield, or resistance to pests, or adaptability to different climates. But the dominant effort is for higher yields. Emerging evidence suggests that when you select for yield, crops grow bigger and faster, but they don't necessarily have the ability to make or uptake nutrients at the same, faster rate.” (*J Am Coll Nutr* 2004;23:669.)

And Dr. Davis recently led a study of 43 garden crops that suggests an overall decline in nutrients. The researchers primarily investigated vegetables, but also looked at melons and strawberries, for which nutritional data was available from both 1950 and 1999.

Dr. Davis and his colleagues determined that six out of 13 nutrients showed reliable declines between 1950 and 1999. “These nutrients included protein, calcium, phosphorus, iron, riboflavin and ascorbic acid,” notes Dr. Davis. “The declines, which ranged from 6 percent for protein to 38 percent for riboflavin, raise significant questions about how modern agri-

culture practices are affecting food crops.” (*J Am Coll Nutr* 2004;23:669.)

The researchers concluded that the most likely explanation was changes in cultivated varieties used today — such as GM and other altered foods — compared to 50 years ago.

“Perhaps more worrisome would be declines in nutrients we could not study because they were not reported in 1950 — magnesium, zinc, vitamin B-6, vitamin E and dietary fiber, not to mention phytochemicals,” explains Dr. Davis. “I hope our paper will encourage additional studies in which old and new crop varieties are studied side-by-side and measured by modern methods.”



Environmental Hazard

Nutrients aren't the only victims of genetic modification of food — the environment suffers as well.

According to a report for the UK government, the most serious harm GM foods pose to soil comes from “the powerful weed killers that such crops were engineered to tolerate and that could wipe out insects on which birds and other wildlife depended.” (*BMJ* 2003;327:180.)

Hunting Down the Hidden GM

Commonly grown GM foods include soybeans, potatoes, sugar beets, radichio, squash, papaya, rice, tomatoes, flax, wheat, corn and cantaloupe (*BMJ* 2003;326:1351). However, other crops may also be genetically engineered.

So how do you know if that cantaloupe you're thumping in the produce aisle is GM engineered to ripen slower?

If you live in Canada or the United States, you have to rely on manufacturers to voluntarily label GM food, which very few choose to do.

Things are considerably better in other countries, however. In November of 2003, the European Union (EU) began enforcing the labeling of GM food in a standardized and legally binding form. If a GM product is used in the making of an end product, its presence must be listed on that product's ingredients list. That way, “The consumer is free to choose whether or not he accepts gene technology in his food purchases.” (*Clin Lab* 2004;50:380-1.)

Choose Organic!

For consumers in countries without mandatory labeling of GM foods, the only way to know for sure that the produce you are buying has not been genetically altered is to choose certified organic products.

Organic foods are grown without pesticides, synthetic fertilizers or anything to disrupt the food's natural genetic code. Dotted with spots and blemishes, organics may not be as visually appealing as GM foods, but they are just as tasty — if not more so — than their altered cohorts.

This chiropractic office listens to the concerns of our patients. We work to provide patients with late-breaking research information on topics affecting their wellness. Please let us know if you are interested in any of the other prevention-oriented topics we have in our office!

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