GMOs: Pros and Cons

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If you've eaten anything today, chances are you've snacked on GMOs. GMO stands for genetically modified organism. Genetically modified (GM) foods are made from soy, corn, or other crops grown from seeds with genetically engineered DNA.

According to the U.S. Department of Agriculture (USDA), GM seeds are used to plant more than 90 percent of corn, soybeans, and cotton grown in the United States. Unless you consciously avoid them, GM foods likely find their way into many of your snacks and meals.

Some people believe GM foods are safe, healthy, and sustainable, while others claim the opposite. Read on to learn about the pros and cons — and what the research says.

Pros of GM foods

Scientists genetically engineer seeds for many reasons. For example, they sometimes make changes designed to increase a plant's:

- resistance to insects
- tolerance to herbicides
- tolerance for heat, cold, or drought
- crop yield

They also engineer seeds to give GM foods stronger colors, increase their shelf life, or eliminate seeds. That's why we can buy seedless watermelons and grapes. Some GM foods also have been engineered to have higher levels of specific nutrients, such as protein, calcium, or folate.

Proponents of GM food contend that genetic engineering can help us find sustainable ways to feed people. Specifically, in countries that lack access to nutrient-rich foods. The heartiness of some GM crops makes it so they can grow in marginal environments. The longer shelf life of some GM foods allows them to be shipped to remote areas.

Potential cons of GM foods

On the other hand, some people wonder if GM foods are safe and healthy to eat. Genetic engineering is a relatively new development. As a result, research on the long-term health effects of GM foods is limited.

GM foods have to meet the same safety requirements as foods grown from non-GM seeds. But critics suggest there's more to be concerned about. Some people worry that GM foods may be linked to allergies, antibiotic resistance, or cancer. Others suggest these concerns are unfounded. Here's what the research says.

Allergies

Food allergies are a growing problem in the United States. According to the Centers for Disease Control and Prevention (CDC), food allergies in children under 18 years of age have increased; from 3.4 percent between 1997 and 1999 to 5.1 percent between 2009 and 2011.

Some people believe that spike is linked to GM foods. But there's no evidence that GM foods in general are more likely to trigger allergic reactions than non-GM foods, according to a study from Harvard University.

Others raise concerns about the transfer of specific proteins from one plant to another in genetic engineering. Proteins found in a relatively small number of foods cause most allergic reactions. Tree nuts are one of the most common triggers.

In the mid-1990s, researchers examined a strain of GM soybean that was engineered to contain protein from Brazil nuts. According to their report in the New England Journal of Medicine, the soybeans triggered allergic reactions in people with Brazil nut allergy. Those soybeans never entered the market and aren't sold to consumers.

The Food and Agriculture Organization of the United Nations (FAO) and World Health Organization (WHO) have since established protocols for GM foods. They require GM foods to be tested for their ability to cause allergic reactions. According to the Mayo Clinic, none of the GM foods that are currently on the market have been found to have allergenic effects.

Antibiotic resistance

Antibiotic-resistant bacteria can resist antibiotics, making them hard to kill. According to the CDC, antibiotic-resistant germs infect two million people each year. Those infections kill at least 23,000 people per year.

Scientists often modify seeds using antibiotic-resistant genes in the genetic engineering process. Some people wonder if there's a link between these GM foods and rising rates of antibiotic resistant bacteria. No studies have confirmed this claim, but more research is needed.

Cancer

In 2013, the journal Food and Chemical Toxicology retracted a paper that linked the herbicide Roundup and Roundup-tolerant GM corn to cancer and premature death in rats. Due to concerns about the paper, the journal's editor reviewed the researchers' raw data and the peer-review process. They found the researchers had used too few rats, the specific strain of rats was prone to cancer, and the results were inconclusive.

Since then, the paper has been republished in another journal, Environmental Sciences Europe. The controversy surrounding the study's findings has continued.

According to the American Cancer Society, more research is needed to assess the potential long-term health effects of GM foods.