

## 20. Genetically Modified Food

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**Introduction.** Humans have manipulated the genetic composition of crop plants for thousands of years, and biotechnology has played a critical role in global agriculture since the start of the green revolution in the mid-1900s. The very recent advent of transgenic crop enhancement, resulting in the crop plants commonly referred to as genetically modified organisms (GMO), has stirred significant debate between those who see GMOs as key to a host of remarkable new possibilities, and those who see danger in them. But at the heart of the controversy lies a blurred distinction between the scientifically assessed riskiness of GMO use and the perceived riskiness as it emerges within public opinion and public policy.

**Material and methods.** Today, genetic engineering may be the most effective way to further improve food production to meet the challenges of a growing global population. Will direct manipulation of DNA by genetic engineering herald next step in crop improvement and food development to meet the future challenges of feeding the world, or is it a risky endeavor that could lead to severe global health consequences?

As about dangerous of GMO many people suffer from allergies to various food items, including nuts, wheat, eggs, or dairy products. There is concern that the protein products of introduced genes may be toxic or allergenic to certain individuals. Also, there is a potential risk, including that the genetic alterations can cause harm and that modified organisms could be inbred with natural organisms, leading to the possible extinction of the original organism.

One critical issue is that multiple genes are being transferred across kingdoms and species such as bacteria, viruses, plants and animals in ways that do not occur by natural breeding methods. All living things are classified according to a ranking system that starts with species. Closely related species are grouped together under a rank that is called a Genus. Plants, Animals, Fungi, Viruses and Bacteria belong to separate Kingdoms. Natural breeding can take place between some species that belong to the same genus and very occasionally between species of different genera. However species that belong to different families do not breed and definitely species that belong to different Kingdoms such as plants, animals, fungi, bacteria and viruses do not breed in nature. Plants for example do not breed with animals, bacteria or viruses. Genetic engineering allows for the transfer of multiple genes between Kingdoms in a way that can never occur naturally. This is something that has never occurred before and it creates a new frontier with many uncertainties due to science's limited understanding about genetics.

The other great misconception is that researchers are only inserting one new gene. At this stage science is not sophisticated enough to insert a single gene and get it to work. To overcome this problem, scientists have to combine the gene with the desired trait (such as herbicide tolerance or pesticide production) with other genes that will make it work (promoter genes). Researchers also insert genes that help them to identify if the new gene is working within the chromosome (marker genes). This becomes a complex construction of transgenes, known as a gene cassette that can come from bacterial, viral, fish, plant and other sources.

**Conclusion:** consuming foods containing ingredients derived from GM crops is no riskier than consuming the same foods containing ingredients from crop plants modified by conventional plant improvement techniques. So, today many people avoid GMO, and even ban GMOs in their countries. But a lot of research has confirmed the safety of the GMO, and these people's fears are not justified.