ECRONICON OPEN ACCESS

EC NUTRITION
Review Article

Advanced Methods of Increasing Nutritional Value of Food

Ayshah Abdali*

Department of Nutrition and Food Science, Montclair State University, Saudi Arabia

***Corresponding Author:** Ayshah Abdali, Department of Nutrition and Food Science, Montclair State University, Saudi Arabia.

Received: February 13, 2019; **Published:** June 17, 2019

Abstract

Genetically Modified Organisms (GMOs) are created by scientists who change the DNA of organisms to provide new products. In 1994, the first genetically modified (GM) food marketed in the United States was the tomato, which had desirable qualities that the customers liked. Both producers and consumers have enjoyed significant benefits of GMOs, such as improving economy and heath. Also, GMO safety has been proven by many science investigations, which show that GMOs are safe for human health. Regulation in the United States enhances the growth of GMOs. Labeling GMOs should be done for important reasons, such as health and nutrition. Many consumers who want GMOs to be labeled do not understand the enormous benefits GMOs can provide, and scientists should provide this knowledge to consumers.

Keywords: *Genetically Modified Organisms (GMOs); Nutritional Value; Food*

Introduction

Genetically Modified Organisms (GMOs) are created through biotechnology and genetic building and fundamentally include genetic alterations in which genetic material is added or expelled to change the genetic structure. Numerous life forms have experienced genetic change, including microbes and infections, plants and creatures, and even individuals. The larger part of GMOs are created for health reasons [1]. Utilizing GMOs started in the past and has been increasing in recent times. Genetically modified foods, like traditional food, carry advantages and disadvantages, which depend on the person's consumption. For example, meats, starches, and fats are the basics for a healthy body, but in the case of overconsumption, the quantity will lead to substantial health risks, such as obesity, diabetes, cancer, kidney disease, toxins, allergies and less nutrition. The problem is some people think that GMOs are not safe for health and should be labeled to give people the freedom to choose what they want to eat.

However, GMOs are safe and have more nutrients, and labeling is for critical and dangerous foods only.

Definition

GMOs have introduced foreign genes - from another animal or plant - into their natural genetic sequence, that is, they do not change the sequence of their DNA in a way that does not occur in the normal state. The technique called "modern biotechnology" or "genetic technology." GMOs can be applied to plants, animals and microorganisms [1].

History

Genetically modified food was invented in the 19th century and rapidly became more common. In 1860, the scientists began to investigate about GMOs. In 1868, protein was discovered as a substance that genetics depend on. Scientists recognized DNA as a carrier of

genetic data that was approved in 1952. Also, the first GMOs marketed were tomatoes in 1994 [2]. In 1972, genetics was able to produce insulin from bacterial enzymes [3]. GM food increased rapidly after that to implement many food products, especially in the United States.

The important of GMOs

Genetically modified food is significant for customers and producers because it provides many benefits. For example, GMO obtains more insect-resistant crops. Scientists enter a gene for the production of toxins; this gene was taken from bacteria (Bacterium *Bacillus thuringiensis*) (BT).

This poison uses a traditional insecticide that does not cause harm to humans. After the introduction of the genetic material in the plant, it becomes more resistant to insects and The plant needs a lower amount of pesticides. To enhance the ability of a plant to resist viruses, genes are introduced from certain viruses, making it less susceptible to the diseases. To increase the tolerance of plants to pesticides, genes from bacteria that already have resistance to pesticidesare introduced. Adding GMO to foods increases nutritional value and improves the taste and shape of the food. GMO crops require fewer resources, such as irrigation and pesticides, thus saving resources and reducing production costs and production of fast-growing breeds [4].

Health and Nutrition

The creation of GM usually develops micronutrients, which help avoids disease. This process provides minerals and vitamins for people who have deficiencies of micronutrients. For example, about half of the individuals in the world have diseases because they lack some vitamins, such as Vitamin A. The deficiency of Vitamin A causes nyctalopia, which is poor vision at night. Only rich countries, rather than developing countries, can support their foods with vitamins to prevent diseases. Therefore, having GMOs with added vitamins will allow all people to consume highly nutritional food that prevents diseases that may come from the lack of vitamins in traditional food. For instance, Gold rice is a genetically modified crop that includes a healthy level of Vitamin A, which protects against night blindness disease [5].

Safety

Many science investigations prove the safety of GM. Most reports said that 88% of GMOs are safe and cause no health problems [6]. A study distributed a review, which assessed a sum of 1783 logical papers on the security of GM harvests distributed from 2002 to October 2012. This report reasoned that there is no confirmation demonstrating the utilization that GM yields enormous dangers to nature and humans [2]. The report talked about some basic open worries over GM sustenance; for example, threats to wellbeing, the spread of transgene and adverse effects on financial aspects, inferring that a significant portion of these worries are theoretical and not substantiated by logical grounds [2]. The study evaluated the safety of tomato, soybean, and maize. The researchers noticed that there were conflicts regarding protein generation and morphological perceptions between mammals bolstered with GM assortments. However, the study was not designed to research that specific methodology. The information couldn't adequately support the finding that transgenic species are more poisonous than the common species [2].

Regulation

Today more than 75% of products in the United States contain GM substance. The United States produces the highest percentage of GM crops in the world. That vast improvement is because of flexible legislation, which treats both GMOs and traditional foods in the same way because there is no evidence that show differences. The GMO foods are currently regulated by three organizations: Environmental Protection Agency (EPA), the United State Department of Agriculture (USDA), and the Food and Drug Administration (FDA) [2]. The FDA regulation promotes that GMOs' genes have to be from non-allergenic and non-toxigenic sources. The government in the U.S.A considers these GMO foods safe, and the EPA regulates them safe to the environment. The United States government has intensive regulations to make sure GMOs are as safe as traditional food before people consume it.

Labeling GMO foods

People are always afraid of change, especially if it is related to their food. Today, many of them are demanding a labeling of genetically modified food without a strong argument. People just ignore the benefits from GMOs, such as the increased nutritional value and feeding more people. In the United States, FDA requires that GMO labeling should show information for heath, nutrition, and substances that cause problems to particular people, such as individuals who have sensitivities to bean batter that can found in non-GMOs [4].

Conclusion and Recommendation

Labeling GMOs should be for necessary reasons, such as GMOs that contains substances that cause allergy [4]. Food Science should educate the society about GMO foods because of misinformation about GMOs can spread in the community.

Overall, Genetically Modified Organisms may provide quality, safe and nutritional food.

GMOs carry enormous benefits for high numbers of populations in the world rather than serious risks. GMOs can prevent disease by increasing nutritional value of food for both wealthy and poor people. Ultimately, consumers have to look for both benefits and hazards and should compare them to make decisions about their diets. Decision to label GMOs should be for real reasons that relate to health and nutritional information. Both traditional food and genetically modified food have risks and benefits on health, which depend on the consumer, his or her behavior, and his or her education. Experts in food science should spend the time to explain and educate people because the consumers have power and can stop the production of these beneficial foods.

Bibliography

1. Watts CB. "Genetically Modified Organisms". Salem Press Encyclopedia of Science (2016).
2. Wong AY and Chan AW. "Genetically modified foods in China and the United States: A primer of regulation and intellectual property protection". *Food Science and Human Wellness* 5.3 (2016): 5124-5140.
3. Farming 1970s to Today, The GMO Age Begins (2017).
4. Egendorf LK. "Food safety (At issue; At issue (San Diego, Calif.))". San Diego Calif.: Greenhaveess (2000).
5. Good as Gold: Can Golden Rice and Other Biofortified Crops Prevent Malnutrition? - Science in the News (2017).
6. National Academy of Sciences Report on GMOs (2017).

Volume 14 Issue 7 July 2019