

Editorial

Genetical modifications: Techniques and applications

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EDITORIAL

Genetically modified organisms (GMOs) (i.e. plants, animals or microorganisms) can be defined as organisms in which the genetic material (DNA) has been altered. The alteration of genetic material can be naturally or artificially done. Foods which are produced from or using GM organisms are referred as GM foods.

Genetically modified crops and organisms

Agricultural plants are one of the most significant examples of genetically modified organisms (GMOs). Resistance against insects is achieved by inculcating gene which produces insecticidal nature into the plant for toxin production from the *Bacillus thuringiensis* (Bt) bacterium. This toxin is used as an insecticide in agriculture and is safe for human consumption. GM crops that inherently produce this toxin, when required but in some specific situations it shows the insecticidal characteristics, Virus resistance makes plants less susceptible to diseases caused by such viruses, which results high crop yield production [1].

Herbicide tolerance is achieved through the introduction of a gene from a bacterium, which results in showing herbicidal characteristics. Through this high crop yield can be achieved. Most of the genetically modified organisms are used for laboratory research purpose. These animals are used as samples to study the function of specific genes and analyse the genes relate to disease and health. Some genetically modified organisms (GMO), however, using for human consumption. Salmon has been genetically engineered organism to mature faster, that these fish are safe to eat approved by U.S. Food and Drug Administration [2].

Today, approximately 90% of the soybeans, corn and sugar beets on the market are GMOs. Genetically engineered crops

produce higher yields; resistant to diseases and pests, have a longer shelf life, and even taste better. These benefits are advantage to both farmers and consumers. For example, longer shelf and higher yields life may lead to lower prices for consumers and pest-resistant crops means that farmers don't need to buy and use as many pesticides to grow quality crops. Genetically modified foods do cause controversy, however. Genetic engineering typically changes an organism during a way that might not occur naturally. Other concerns include the likelihood of the genetically engineered foreign DNA spreading to non-GMO plants and animals. It is even common for scientists to insert genes into an organism from a completely different organism. This raises the possible risk of unexpected allergies reactions to some GMO foods [3].

Current Use of Genetically Modified Organisms

- Increased crop yields,
- Reduced costs for food or drug production,
- Reduced need for pesticides, enhanced nutrient composition and food quality
- Resistance to disease and pests,
- Greater food security and medical.
- crops that mature faster and tolerate aluminum, boron, salt, drought, frost, and other environmental stressors, allowing plants to grow in conditions where they might not otherwise flourish Other applications include the assembly of nonprotein (bioplastic) or nonindustrial (ornamental plant) products [4].

Products still in development are vitamin enrichment, vaccines, oral vaccines, faster maturation, Coho salmon. GMO foods may provide better nutrition and maybe even be engineered to contain medicinal compounds to reinforce human health. In the future, Genetically Modified Organisms (GMOs) are likely to continue playing an important role in biomedical research field

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[5]. If Genetically Modified Organisms (GMOs) can be shown to be both safe and healthful, consumer resistance to these

products will most likely diminish.

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