



# Evaluation of Genetically Modified Organisms in Terms of Islamic Law

Amirreza Mahmoudi<sup>1\*</sup>, Abbas Taghvaei<sup>2</sup>, Mohaddese Ghavamipour Sereshkeh<sup>3</sup>

<sup>1</sup> Department of Law, Lahijan branch, Islamic Azad University, Lahijan, Iran.

<sup>2</sup> Islamic Education Department, Lahijan Branch, Islamic Azad University, Lahijan, Iran

<sup>3</sup> Department of Law, Lahijan Branch, Islamic Azad University, Lahijan, Iran.

Received: 25 February 2023/ Revised: 01 April 2023/ Accepted: 24 May 2023

## Abstract

Genetically Modified Organisms (GMO), which emerged in order to meet the increasing world population and the food need arising in this direction, to bring the structural properties of foods to the desired level by interfering with the genes of the foods by using the developing technological opportunities and thus to get more efficiency from a small area in a short time is important in terms of the food production philosophy of the future. Although there is not enough experimental evidence about the possible benefits and harms of interfering with the genes of foods and animals by means of gene technology, necessary precautions should be taken to minimize the possible effects and risks on the environment and future generations. The haram or halal status of GMO, which has started to take place in the food sector, has also been seriously discussed in terms of Islamic law. Issues for which there is no clear provision are tried to be decided within the framework of benefit-harm balance and within the framework of the general principles of fiqh. In order to determine the verdict of Genetically Modified Foods, its effects on health, environment, economy and politics should also be taken into account. In particular, it is necessary to consider the possible risks that may arise, such as changes in human genes, by interfering with the nature of the food.

**Key words:** Genetically Modified Organisms (GMO), Biotechnology, Food, Islamic Law, Gene

---

\*Corresponding Author: E-mail: amirreza.mahmodi@gmail.com



## Introduction

Food is one of the basic human needs. For this reason, it is one of the important areas where the reflections of religious belief are seen, as well as the interest of many branches of science. In this field, the religion of Islam has determined some principles such as obtaining clean and halal products and has also brought some limitations. A general freedom is envisaged in food, provided that these limitations are not exceeded. Some basic criteria were also set by warning people not to act to remove these limits. (Kahraman, 2011). Genetically modified organisms (GMO) are a concept used for products that have been improved or modified using modern biotechnological methods. (Boran, 2016, 239) It is of vital importance to examine the harms of these organisms, whose genes have been changed by changing their structures, to humans or the environment, and whether the changes in their gene structures pose a risk to humanity in the future and, if there are such issues, to investigate their religious implications. Because it is stated that it is possible to get plenty of products in a narrow area in this way, and it is said that the only solution to the food shortage that may occur in the future is GMO products. Considering that according to the ISAAA 2017 report, the genetically modified (GM) plant cultivation area has reached 189.8 million hectares and the number of countries using GM plants has reached 674, it is likely that the whole world will come face to face with GM plants in a short time. For this reason, there is a need to examine the nature and provision of GMOs in terms of Islamic law.

### 1. Genetically Modified Organisms (GMO)

Plant or animal microorganisms inherited from a living species by transferring a gene or genes from a living thing other than its own species are called Genetically Modified Organisms (GMO), and in the English literature, Genetically Modified Organism (GMO) and Genetically Modified Plants are called GM Plants. The basic principle when producing GMOs is to change the genetic structure of a living thing by transferring a gene from one living thing to another and to obtain a living thing with a new genetic struc-

ture. (Denli, 2012) The essence of this practice is to change the gene sequence of the organism and to gain some features that are not found in the organism's own nature. Living things called GMOs are organisms that have emerged as a result of hereditary changes in the genes of living things, using modern biotechnology or recombinant master techniques. Some of these are Tran's genetic products. Trans genetic products are the transfer of one or more genes cloned from one living species to an organism from another living species. If a living creature gains a new character, depending on the trait of the transferred gene, it is a genetically modified creature. If the gene is transmitted from an individual in the gene pool of that creature, it is called "sex genetics". If it is taken not from its own gene pool but from the gene pool of another species and transferred to another species, it is called "trans genetics". (Boran, 2016). The genetic structure of living things can be changed in many ways, by human hands. It can be the addition of new genes that do not exist in the living thing and taken from another living thing or it can be in the form of dysfunctional genes that are functional in the living thing by using various techniques. The process of changing the genetic structure is done in animals and plants. Genetically modified animals are intensively produced in laboratory environments to understand the functions of genes through drug trials, and because they are used for testing purposes in these environments, they remain outside the boundaries of public debate. There are also farm animals developed for food use, which we are likely to encounter in future discussions of GMOs. However, to date, no permit has been obtained for this type of production in any country. Therefore, today, the main axis of the debate is genetically modified (GM) plants. (Şakiroğlu, 2010) With the significant increase in the production of GMO products around the world, both public and public opinion states that GMOs have negative effects on human health and the environment, since these products have emerged with a change that will not occur naturally. Debates continue both in the political and scientific fields (AFAD, 2014).



### 1.1. Production Status and Importance of GMOs

According to the International Service for the Acquisition of Agribiotech Applications (ISAAA) report, biotech (GMO) plants were produced in a total of 189.8 million hectares of land in 24 countries in 2020. While 19 of the 24 countries that grow GMO products are developing countries, 5 are industrial countries. Developing countries accounted for 53% of the global biotechnology area, while industrial countries accounted for 47%. In addition to these 24 countries, 43 countries (26 EU countries) have officially imported biotechnology products for food, feed and processing, and thus, a total of 67 countries in the world still continue to use biotechnology products. The 5 industrial countries USA, Brazil, Argentina, Canada and India, which are the largest producers of GMO products in the world, obtained biotechnology products in 173.3 million hectares of land in 2017, which constitutes 91.3% of the total planted area. 94.1% of the biotechnology product grown is soybean, 31.4% corn, 24.21% cotton, 10.2% canola, 1.29% alfalfa, sugar beet, papaya, zucchini, eggplant, potato and apple. In addition to these products, production studies continue on rice, banana, wheat, chickpeas, pigeon peas, mustard, cassava and cowpea.

In the ISAAA report, countries affected by the food crisis in 2020 It is stated that approximately 48 million of approximately 108 million people are still at risk of hunger, the world population is expected to reach 8.6 billion in 2030, 9.8 billion in 2050 and 11.2 billion in 2100, and food production should increase by 70% to feed the growing world population. . Adding to this population growth is that climate change may cause a 23% decrease in corn, wheat, rice and soybean production by 2050, while also affecting the zinc and iron content of plants, and that by 2050 approximately 1.4 billion children are at risk of iron deficiency. It is conveyed that the most effective method of combating these negativities is possible with the adoption of biotechnology products, which will eliminate the imbalances in food production and preserve the nutritive contents of

the crop. Again, the report emphasizes that biotech crops contribute to the environment, human and animal health, and the improvement of the socio-economic conditions of farmers and the general public, and over the past 21 years (1996-2016), more than 95% of biotech crops have been grown by more than 16 to 17 million from developing countries. It is said that the farmer is provided with an economic benefit of USD 186.1 billion, crop productivity is increased, biodiversity is protected, plants are resistant to chemical pesticides, they are protected from harmful insects, a better environment is created, CO<sub>2</sub> emissions are reduced and thus the economic situation of the small farmer is improved. It has been stated that it is important for the future.

### 1-2. Usage Areas and Production Purposes of GMOs

GMOs are used in many fields from health to agriculture, from industry to seafood, in plant seeds, animal feeds and animals, as well as in the health sector, in the production of some drugs such as insulin, cancer drugs, vaccines (Demir, 2006, and Ergin, 2013), in organ transplantation, in the production of some recombinant proteins with medical importance, in the food industry used rennet, etc. It is used in the production of enzymes and in poultry nutrition. (Bağış, 2002, and Çetiner, 2009). Gene transfer to plants in the field of biotechnology, making plants resistant to bacteria, parasites, viruses, fungi, herbicides and insects, increasing the resistance of plants to heat, cold, drought, humidity or adverse climatic conditions, enriching the amount and content of nutrients, prolonging the shelf life of products, It is stated that it is made for purposes such as increasing productivity, shortening fruit formation times, using plants consumed daily as vaccines and drugs, and using them in scientific and medical research. (Haspolat, 2012). Production costs will decrease and more products will be obtained at a cheaper cost, but the most common applications in GMO plants cultivated for commercial purposes are to provide resistance against insects and weeds that harm the plant. It is argued that transferring r traits is rare (Şen, 2014, and Kafi, 2010, 87).



### 1-3. Ethical Controversies and Potential Issues Related to GMOs

Despite the economic inputs, GMOs are exposed to many criticisms that develop on the axis of ethical concerns. Whether GMOs, and more specifically transgenic organisms, are necessary to achieve agricultural targets is heavily debated. While one side sees these technologies as the key technology that will eliminate the problem of hunger in the world, the other side argues that these technologies are just an illusion that cannot provide any concrete progress. On the one hand, studies show that GE crops have the potential to offer some advantages, but it is also stated that it cannot be a solution to chronic agricultural problems alone.

Because the hunger problem, which is one of the leading global agricultural problems, is a social problem. Thus, the problem of hunger is about sharing rather than lack of food. The solution to this problem will have to be sought in political and social platforms. On the other hand, new technologies have the potential to offer new possibilities in improving the characteristics such as disease and pest resistance, nutritional quality, which cannot be developed using traditional plant breeding methods. The second debate is whether genetic intervention is legitimate in the development of plants, and environmentalists object to interference with the natural structure. The third point of contention is the possible risk of health problems that GMOs may cause. Since genes that do not exist in them are added to almost all GM plants, these genes have the potential to cause a number of problems in the short, medium and long term. Because different genes are transferred to many different crops using different methods, it is recommended that the health risks of each GMO plant be evaluated exclusively. The World Health Organization has explained the potential risks posed by GMOs in a very comprehensive way and it has been stated that the vast majority of short and medium term health risks can be overcome if each GMO is tested considering the existing risks. These risks are;

The possibility of the change to cause poisoning,  
The possibility of creating an allergy,

The risk of the occurrence of special ingredients that may have a nutritive or toxic effect,  
Problems with the stability of the transferred gene,  
The effect of gene modification on food quality,  
Classified as side effects of gene splicing.

It is stated that the first five of these effects may be possible in the short term with tests, but the possibility of predicting the side effects of gene addition is low, so GMO products should be subject to continuous inspection and re-evaluated at regular intervals.

The emergence and understanding of the positive or negative effects of new technologies on health and the environment requires many years. Since there is not enough time for GMO products, their effects on human health and the environment are still being discussed. Regarding GMO products, the World Health Organization (WHO) and the Food and Agriculture Organization (FAO) stated that it is not correct to make a general comment about GMO foods because the genes used in all of them and the way they are added to the food are different, in food products developed by traditional methods and ready-made food products. They state that generally no advanced allergy tests are performed on foods, and that GMO foods are evaluated by passing these tests, and that all tests of the GMO foods currently on the market have been carried out and no allergic effects have been observed, and products with allergic effects are not allowed to be put on the market anyway. However, it also reminds that long-term research on the products should be done. FAO draws attention to the world's hunger problem and states that traditional and modern biotechnological techniques are necessary and that it will not be possible to meet the needs of the world population without them. In particular, he states that newer biotechnological techniques lead to rapidly increasing improvements in production quantity and food quality, and that the use of these techniques does not mean the production of food that is less safe for humans and the environment than those produced by traditional methods.

### 1-4. Potential Benefits and Harms of GMOs

Researchers expressing a positive opinion about genetically modified organisms support



their views by highlighting the following benefits of GMOs. Poverty and hunger can be prevented in the world, especially in third world countries, by arguing that crop yields will be increased and production costs will decrease. By obtaining products with high nutritional value, allergy and toxin-free, people can be fed in a healthier way. By producing insect-resistant products, environmental impacts can be reduced by using less pesticides. By producing products that are resistant to herbicides, diseases, abiotic stresses such as drought and salinity, production can be made even in areas where agricultural production is limited, and in this way, more products can be obtained from the unit area. By producing products with a long shelf life, long-distance transfer of products can be facilitated. With the elements to be added to the foods, the foods can be used for vaccination purposes and in this way, immunity against diseases can be easily achieved. MO foods can be used for therapeutic purposes by increasing the production of various substances that did not exist before or in small amounts in foodstuffs. The use of gene technology and active substances of drugs for diagnosis and treatment in the field of medicine. Increasing the adaptation of plants to environmental conditions. Researchers against GMOs draw attention to the following possible risks. Risks to Human and Animal Health; potentially allergenic potential toxicity, potential carcinogenicity, formation of antibiotic resistant microorganisms. Environmental Risks; Genetic contamination, damage to beneficial organisms, soil and water pollution, unexpected consequences. Socioeconomic Impacts; The use of genetically modified organisms has disrupted traditional agricultural production for thousands of years, and farmers are forced to buy seeds of GM crops from a few large companies, which are between 25% and 100% more expensive than non-GMOs.

### 1-5. Legal Regulations Regarding GMOs

As a result of the concerns about the possible harms of genetically modified products produced by biotechnological means to human health and the environment, many measures have been taken and legal regulations have been made in order to control GM production and protect biological

diversity in the world. As of 2012, international agreements such as the UN Convention on Biological Diversity, to which a total of 196 countries are party, as well as the Cartagena Biosafety Protocol, the Nagoya-Kuala Lumpur Protocol and the FAO International Plant Protection Convention, have been put into effect. (Mahmut Erdogan, 2015) Legal regulations regarding GMOs differ from country to country. The USA, the largest producer and user of GMOs in the world, is not a party to the Cartagena Protocol on Biosafety, which is part of the UN Convention on Biological Diversity. While there is no labeling requirement for products approved by the Food and Drug Administration in the USA, there is a strict control in EU countries and GM products above the threshold value determined as 0.9% are required to be labeled. The “United Nations Biosafety (Cartagena) Protocol”, which has been in force since 2003 and has been prepared to prevent the negative effects that may arise from biotechnology applications in order to protect biological diversity and ensure its sustainable use, has been designed to protect the environment and human health from the research stage of GMOs to the release into the environment and the transit phase. It is a legal document with a wide scope to prevent possible risks.

### 2. Evaluation of GMOs in terms of Islamic Law

Since the issue of GMO is an issue that has emerged in our age, it seems difficult for us to directly associate the issue with any verse, hadith or consensus. For this reason, based on the general principles of religion, a method of making a judgment is used, based on the “maslahat” and “reason” axis, in line with the principle of “summation of interest and defense of mazarrat” (providing benefit and preventing harm). It is stated in the Qur’an and Sunnah that the foods that are strictly forbidden and forbidden are determined, and it is stated that good and clean (tayyibat) things, halal, dirty and harmful (habâis) things are forbidden, and it is accepted as a general principle that substances harmful to health should not be taken from the indications of some verses.

In addition, considering the principle of pro-



protecting one's physical and mental health, which is one of the purposes of the prohibitions in nass, Islamic jurists conclude that it is also forbidden to eat and drink substances that are proven to be harmful to one's physical and mental health with the ta'lil method. For, not putting human life in danger, protecting life and repelling harm are among the basic principles of Islam. Therefore, as in the past, one of the criteria to be used in determining halal and haram foods today is the benefit and harm criterion.

When a judgment is made regarding GMOs, it is absolutely necessary that "Allah has cursed Satan and he will certainly change [.....] I will command them and they will change what Allah has created" . "There are some people who dominate [.....]. In the light of the verses "it tries to destroy the crops and generations when it is dealt with" (Bayındır, 2009) verses, it is also suggested that the change of genes should be evaluated with the approach of disrupting the creation, whether it interferes with the nature or not. As a result, it is stated that an opening can be gained to the GMO issue (Döndüren, 2011).

### **2-1: Approaches in the Islamic World with GMO Products**

Regarding GMOs in the Islamic world, the International Islamic Fiqh Academy, affiliated to the Organization of the Islamic Conference, has stated that it is permissible to use cloning and genetic engineering techniques on bacteria, microorganisms, plants and animals, provided that the Shariah criteria are adhered to in order to gain benefit or to eliminate harm. As a result of the 9th Islamic Medical Fiqh Conference held in Casablanca, in which the copying of plants and animals is accepted as permissible provided that the Indian Fiqh Academy brings benefit to humanity and does not threaten humanity in religious, moral and physical terms, it is necessary to decide on genetic interventions on plants in terms of benefit and harm.

The Islamic Fiqh Academy affiliated to Râbitâtu'l-Âlemi'l-Islami states that genetic engineering in agriculture and animal breeding should be taken after extensive measures are taken to prevent any harm that may occur, even in the long term, on humans, animals or the envi-

ronment. The World Halal Forum (World Halal Forum) states that it is permissible to use GM foods that will harm human health and the environment in the long run. Forum) report that GM products that pass strict food and environmental safety tests are considered halal, provided that they are obtained from halal source, Indonesian Scholars Assembly has stated that it is halal to consume plant-derived foods, and religious authorities in Singapore have a positive attitude towards using GMOs. , Islamic Food and Nutrition Board of America (The Islamic Food and Nutrition Council of America/IFANCA) also conveys the statements that they approach GM crops positively under certain conditions.

### **2-2: Evaluation of GMO in terms of Fitrat**

It was stated that in GMO products, foodstuffs are interfering with their original state of creation, and since this means breaking their nature, they should be judged accordingly. They will change what God has created" "There are such people that [.....] When he takes over he tries to destroy crops and generations".

What meanings are attributed to the concept of fitrat in the verses and how it should be understood is a matter open to interpretation. Should we understand the deterioration of nature as a deviation from the understanding of oneness and creating mischief in the world, or as any kind of intervention? If we accept all kinds of interventions and changes as disrupting the nature, then should interventions to the human body such as cutting hair, beard, treatment and surgery, as well as matters such as cultivating the land for reconstruction of the earth, changing the environment, and grafting trees should also be considered as disrupting the nature?

In order to fully explain the relationship between GMO and nature, it is necessary to look at whether GMO actually spoils the creation. GMO is not destroying or changing the structure of animals or plants, namely genes, but actually adding a gene from outside. For example, adding one more gene to approximately thirty thousand genes in the plant and producing a new protein in the plant. In other words, a change is made in thirty thousand. In this respect, it is said that it is more correct to call GM plants with a new



gene instead of genetically modified ones (Özcan, 2011).

Regarding whether the genetically modified products do not harm the nature or not, if GMOs do not cause great harm to the extent claimed, on the contrary, if they serve the improvement of the natural life, making such changes on the plants should not be considered as a ban on spoiling the creation. For, Almighty Allah created man as a caliph on earth, put whatever is in the earth and in the sky at his service, and bestowed a wide authority over them. He has appointed certain sustenance for each person, but has ordered him to work and strive to obtain this sustenance. Sustenance is what man obtains by interfering with nature, domesticating animals, restoring lands, improving plants and exchanging them. Man has been interfering with nature in some way since he was created. Culture and civilization is the name of the changes that man has made on nature. The important thing is not interference with nature, but its intensity, dimensions and whether nature can repair it. Therefore, the measure of legitimacy of our dispositions on nature is their corrective and corrupting feature. For this reason, it is stated that genetic changes for the improvement of the diseased aspects of plants and the increase of their productivity are permissible and even desirable.

Plant grafting, which can be seen as an intervention to the fitra, is carried out for breeding purposes. After the Prophet migrated to Madinah, when he saw those who vaccinated the dates, he said that it would be better to leave the plants as they are (natural), but when it was said that good products could not be obtained from dates that were not grafted, he said, "You know your worldly affairs better" (Muslim, 1977) and opened the way for science based on experience and started vaccination. It is seen that there is no obstacle to the improvement of the plant and to obtain a quality product, as well as vaccination is allowed, gene transfer for the purpose of protecting plants from insects and diseases, breeding and obtaining quality products should not be considered as disrupting the nature. However, just as the vaccine can be made between certain plants, it is possible to consider gene transplantation between certain

genera. Considering that, Islam supports scientific studies if it does not harm humanity and the environment, if it is for the benefit of humanity, there should be no harm in conducting genetic studies on plants and animals. The opinions of some researchers, such as Hasan Ali al-Shazeli, that genetic studies on plants and animals are permissible and religiously necessary, as it is conducive to the development of organisms put at the service of human beings and to benefit from them at a higher level, and to provide people with essential, pilgrimage and tahsini-type benefits are also conveyed. However, even if genetic studies are done with good intentions, it can be said that this is not permissible, since this process will not be a correction but a corruption if the result of the intervention is more harm than the expected benefit.

### **2-3: Evaluation of GMO in terms of Benefit and Harm**

The subject of GMO is mostly discussed in terms of "maslaha" and "mafsedet" in terms of Islamic law. The words "benefit, benefit" can also be used as the equivalent of the word maslahat here. (Hacak, 2004). The general purpose of Islamic law is to reform and abolish corruption. In verses, maslahat is commanded to be carried out, and mafsedet abolished. Accordingly, maslahat, that is, benefit; The act with which righteousness occurs, that is, the act with which there is a permanent or mostly (victorious) benefit for the society or individuals<sup>50</sup>, while malice (harm) is defined as the act with which mischief occurs, that is, the act that is always or mostly harmful for the society or individuals. An act may not be pure benefit or pure harm. An act can contain both benefit and harm. In this case, the situation with the "victorious" majority, as mentioned in the definitions, is essential. In order for the acts to be determined as benefit or harm, the following features must be present together;

- has (definitely) come true,
- be continuous (muttarid),
- victorious (mostly),
- being open (vadih),
- One must be continuous (munzabit) and the other irregular (suffering).

It is stated in the Qur'an and the Sunnah that foods



that are strictly forbidden and forbidden are determined and it is accepted as a general principle that substances harmful to health should not be taken from the indications of some verses. The protection of mental health is one of the aims of the bans on food. For this reason, it is concluded that the eating and drinking of substances that are clear and proven to be harmful to human health are also forbidden by religion. For, not putting human life in danger, protecting life and repelling harm are among the basic principles of Islam. Therefore, one of the methods to be applied in determining halal and haram foods is the criterion of benefit and harm (Aktan, 2011).

It is rare for foods to contain pure benefit or pure harm. Often, benefit and harm are found together in foods. Whether a food is beneficial or harmful is decided according to whether the benefit or harm is not probable but actual, continuous, mostly and obvious. In other words, in order for us to say that a plant is harmful, the harm characteristic of that plant must occur rather than unlikely, the damage must be continuous rather than occasionally seen, the harm must be greater than the benefit, and the damage must be obvious. For example, in the first verse about alcohol, "They ask you about alcohol and gambling. Say: In these two there is great harm and some benefit for people; its harms are greater than its benefits". Then came the "O ye who believe! Drinking, gambling, obelisks, fortune-telling arrows are diabolical disgusting things. Avoid them so that you may attain salvation" (Maide) and alcohol is forbidden. In the first verse, it is stated that there are some benefits in alcohol, but its harm is greater. In the second verse, it is forbidden. As it is seen, whichever feature is clear, continuous, and excessive and realized, the plant is subjected to that feature. Alcohol has been rendered haram because its harmful feature is high, clear and continuous. In terms of fiqh method, GMO foods should be approached in line with these conditions and the decision should be made according to this method. Otherwise, judgment cannot be made on probable situations that have not yet occurred, are not clear whether they will occur or not, even if they do happen, it is not clear whether they will exist continuously and mostly. Because

"a sure does not come to an end with burden". (Mecelle, 1982).

Since the emergence and understanding of the positive or negative effects of GMOs on health and the environment requires many years, there is not enough data yet on what these effects are. For this reason, the possible risks of GMOs are mentioned. The World Health Organization (WHO) and the Food and Agriculture Organization (FAO) stated that it is not correct to make a general comment about GMO foods because the genes used in each of them and the way they are added to the food are different, and there is usually no advanced allergy testing in traditionally developed food products and prepared foods. They state that GMO foods are evaluated by passing these tests and that all the tests of the GMO foods currently on the market have been carried out and no allergic effects have been observed, and products with allergic effects are not allowed to be put on the market anyway. Tüzüner Scientists who stated that GMOs are more beneficial than harmful; they say that no serious side effects of the hormones used in plants have been proven so far, and that the articles published about their harm are insufficient in terms of method (Çetiner, 2012).

According to the scientists in question, various national, regional and international rules. One of the negativities frequently put forward by the opponents of GMO is that the genes transferred to transgenic products may cause allergies and toxic effects in humans. However, the fact that intensive and comprehensive laboratory and clinical tests are carried out and the findings are reviewed by independent scientific committees before commercial cultivation of these products is allowed prevents the placing on the market of products that may have such side effects. It should be remembered here that transgenic products are not more likely to cause allergies than products obtained by conventional breeding methods. The claims that GMO products cause infertility and that experiments on mice show this do not reflect the truth, and they argue that the claims that GMO products cause antibiotic resistance are not true.

Again, some scientists state that the GMO issue





is similar to the pharmaceutical industry, that GMO products are not introduced to the market without supervision that most corn, soybean and cotton are sold in GMOs, and that tomatoes came to the country in 1600s and potatoes 200 years ago. that these products are purified from harmful substances and transformed into today's state, that no technology is only useful, for example, dynamite can be used in tunnel construction and wars, the best product can be obtained with GMO technology, it can also be used as a biological weapon, colored rice in Far East countries with GMO technology They say that blindness in humans is prevented, and the USA has reduced the allergy rate of 34 percent in milk to zero with GMO technology.

Looking at the statements of scientists working on GMOs, it is seen that genetically modified products provide some benefits to humanity, while some possible risks are also mentioned. Measures against these risks should be taken now. However, it is also known that some information about harm and risks is exaggerated. Because some of the listed risks are not unique to GMOs, but are simply the repetition of general problems specific to GMOs. For this reason, it seems a bit hasty to make a negative judgment on the subject, since the negatives that have been revealed so far are not directly related to GMOs. When GMOs are examined within the framework of benefit and harm criteria and the explanations of scientists about the benefits and harms of genetically modified products, it is seen that the claimed harms have not yet occurred but are assumed likely to occur in the future. However, it is seen that the benefits mentioned are clear and realized at the moment. In this case, it can be said that it is permissible for GMOs because the damage is probable and the benefit is clear and realized. However, it is possible to prohibit it in case of obvious and mostly damage in the future.

### Conclusion

Since GMOs are a new situation that has emerged in our age, there is no explicit provision in verses and hadiths. There are clear criteria in the Qur'an and Sunnah regarding the halalness and harness of food and beverages. In the light

of these evaluations, if there is definite evidence that these products are harmful, they are considered haram and prohibited, and if there is definite information that they are beneficial, they are considered halal. GMOs related issues should be examined in terms of "maslahat" and "mafsedet". GMOs have clear benefits for humanity. The harms mentioned in relation to GMOs are possible risks and not specific damage. Doubtful things cannot be judged. In accordance with the rules of "There is no respect for tawahhum", "There is no certainty with a figure", the judgment can be built on clear, definite and existing issues. Since the harm of GMOs is unclear and the benefit is obvious, the prohibition cannot be given. It seems difficult to consider GMO as a distortion of creation. Because the context and purpose of the verses about fitra do not include plant breeding. GMO should be applied for plant breeding for the benefit of humanity. It is a breeding in plant grafting and can be considered as a gene transplant. There is no harm in consuming these products if there is a necessity and need for consumers in this regard. Consuming these products even when there is no necessity or need cannot be considered as haram. As long as it is not against religious principles, there is no objection to some gene transplants on plants or animals, provided that it does not cause negative consequences for humanity and nature. There does not seem to be any objection to the application of traditional breeding methods such as providing resistance against diseases, weeds and insects, and increasing the nutritional quality of plants through gene technologies.

### References

- Aktan, Hamza, "Hakkında Nas Olmayan Gıda Maddelerinde Dini Hükümün Belirlenmesi", Güncel Dini Meseleler İstişare Toplantısı-IV, Diyanet İşleri Bşk. Yay., Afyonkarahisar, 2011.
- Bağış, Haydar, "Transgenik Biyoreaktörlerde Rekombinant Proteinlerin Üretimi", İstanbul Üniv. Veteriner Fakültesi Dergisi, 28 (1), İstanbul, 2002.
- Bayındır, Abdulaziz, "İslam Fıkhı Açısından Helal Gıda", VI. İslam Hukuku Anabilim Dalı Koordinasyon Toplantısı, Bursa, 2009.
- Boran, Mustafa, Hanefi Mezhebinde Yiyecek ve İçeceklerde Helallik ve Haramlık Ölçüleri", Çanak-



kale Onsekiz Mart Ün., Sosyal Bilimler Enstitüsü, Doktora Tezi, Çanakkale, 2016.

AFAD, Genetik Yapıları Değiştirilmiş Organizmaların Biyogüvenliği Yol Haritası Belgesi, Ankara, 2014.

Demir, Ayten, Fatih Seyis, Orhan Kurt, “Genetik Yapısı Değiştirilmiş Organizmalar: 1. Bitkiler”, Ondokuz Mayıs Ün. Ziraat. Fakültesi Dergisi, 21(2), Samsun, 2006, .249-258.

Çetiner, Selim, “GDO-Kanser İlişkisi Kanıtlandı mı?” Tarlasera: Aylık Tarım ve Kültür Dergisi, Ekim 2012, s. 16-18

Denli, Muzaffer, Genetiği Değiştirilmiş Organizmalar, İstanbul Ticaret Odası Yayınları, İstanbul, 2012.

Döndüren, Hamdi, “Katkı Maddeleri ve Gıdanın Helallığı Gıdalardaki Katkı Maddelerinin Durumu”, Güncel Dini Meseleler İstişare Toplantısı-IV, Diyanet İşleri Bşk. Yay., Afyonkarahisar, 2011.

Günay, H. Mehmet, “Hormonlu ve GDO’lu Ürünlerin Dini Hükmü”, Güncel Dini Meseleler İstişare Toplantısı-IV, Diyanet İşleri Bşk. Yay., Afyonkarahisar, 2011.

Hacak, Hasan, “Menfaat”, DİA, TDV İslam Ansiklopedisi, İstanbul, 2004, c. XXIX.Haspolat, Iraz (2012), “Genetiği Değiştirilmiş Organizmalar ve Biyogüvenlik”, Ankara Üniversitesi Veterinerlik Fakültesi Dergisi, Ankara, 2012.

Korkut, Deniz, Ahmet Soysal, Genetiği Değiştirilmiş Organizmalar, Halk Sağlığı Uzmanları Derneği (HASUDER) Yayınları, Ankara, 2013.

Mecelle, (Kontrol Ali Himmet Berki), İstanbul: Hikmet Yayınları, 1982.

Müslim, Ebu’l-Hüseyin Müslim b. Haccâc [261/875], Sahîhi Müslim. (Çeviren: Ahmed Davudoğlu). İstanbul: Sönmez Yayınevi, 1977.

Özcan, Sebahattin, “İstihale” Tebliğinin Müzakeresi, Güncel Dini Meseleler İstişare Toplantısı-IV, Diyanet İşleri Bşk. Yay., Afyonkarahisar, 2011.

Şakiroğlu, Muhammed, “Seta Analiz”, Fırsatlar ve Korkular Arasında GDO’lar, SETA Siyaset Ekonomi ve Toplum Araştırmaları Vakfı, Ankara, 2010.

Şen, Selen, Sevin Altınkaynak “Genetiği Değiştirilmiş Gıdalar ve Potansiyel Sağlık Riskleri”, SAÜ. Fen Bilimleri Dergisi, 2014, Cilt 18/1, s. 32-33;

Tüzüner, Mete Bora, “Genetiği Değiştirilmiş Gıdalar İle İlgili Güncel Tartışmalar”, Turkish Family Physician, cilt 1, sayı 3, İstanbul.