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**GENETICALLY MODIFIED FOODS**

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Genetically modified foods are nothing new in the modern world's food market. In fact, the majority of food products found on store shelves today are genetically modified. There are various opinions, both positive and negative, on these food products and neutral ground proves hard to find. What are genetically modified organisms? Genetically modified organisms, according to various medical research papers, are organisms that contain artificially altered genetic material that would not be found naturally in nature. This technique of gene manipulation not only applies to the food industry, but has also expanded to the chemical and pharmaceutical industry. This thesis serves the purpose of investigating and concluding whether the use of genetically modified foods in today's world is beneficial or detrimental to the human organism.

Firstly, genetically modified organisms are organisms that contain artificially altered genetic material that would not naturally occur in nature. According to research, the first genetically modified product was approved in the early 90s (1992) as it was seen as a scientific breakthrough in biology at the time and also as the answer to solving the rise in world hunger due to the rapid increase in world population. Countries with extreme climates, such as high temperatures or low temperatures, could now cater for their inhabitants, as genetically modified foods could withstand various climate conditions. Scientists were now able to edit the DNA of an organism and produce a desired trait. Various crops such as corn, cotton and papaya were the first to be modified and they proved to be a success. Genetically modified corn was able to withstand various climate conditions and lacked toxins produced by fungi due to its resistance to the corn rootworm insect, which damaged corn and allowed fungi to flourish.

In addition, due to the prior successes, the research progressed to modifying living organisms such as cattle and horses which had desirable traits. For instance, cows were genetically modified to produce more milk and fattier meat, whilst horses were modified to be stronger and faster, and chickens were made to grow much faster, providing more meat for the growing world. As aforementioned, the technique of genetic modification extended to the pharmaceutical industry too, where, to date, still proves to be a boon. For instance, antithrombin (found in human blood plasma) can now be manufactured genetically in goat milk. This is considered an enormous breakthrough in the medical department as it reduces the amount of blood donors needed. It is estimated that per year, one genetically modified goat produces this antithrombin in its milk, thus substituting the need for 90 000 blood donors. The benefits of this, either than the obvious reduction of donors, is that the goats are kept in a controlled environment, so they are not exposed to any external factors that can be harmful to humans. Other drugs that are produced in plants include vaccines for cholera, anthrax, plague, influenza, hepatitis C, insulin, spermicidal antibodies and interferon for liver diseases.

However, as aforementioned, there are negative aspects to genetically modifying organisms. Most of the criticism is derived from fear in the lack of knowledge on the exact illnesses caused by genetically modified organisms. Some doctors speculate that genetically modified organisms are the causes of most allergic reactions and the growth of bacteria antibiotic resistance. Due to the fact that genes are being transferred, scientists perceive that an antibiotic resistant gene could be transferred into the human organism's benign bacteria in the intestinal microflora, which can be lethal. These genetically modified organisms are also thought to cause infertility, but further research is still being conducted to prove this theory. Furthermore, the use of genetically modified crops hasn't proved to be good for the environment either. Since genetically modified crops release glyphosate, they cause the soil in which they are planted to become sterile after they are harvested. This not only cripples the environment, but also affects farmers, as they now have to rely on big companies for seeds to farm, which they purchase

at high prices. Due to the soil being sterile, the food chain is also affected. The organisms which were not considered to be pests start to increase in number as the organisms that regulated them are eliminated from the soil. Furthermore, it is critical to identify genetically modified foods before purchase, to avoid allergic reactions and to promote a healthier way of living. Dieticians encourage people to eat organic foods instead of genetically modified, as organic foods deliver raw nutrients that do not contain or carry additional DNA that can be harmful to the body. Genetically modified foods are usually easily identified as they have a tag or sticker displaying that they are genetically modified.

In conclusion, in as much as genetically modified foods prove to be boon to society, they can also be viewed as being a bone of contention. They might help reduce the number of blood donors needed and supply a cornucopia of food to the rapidly increasing population, but at what cost? At the current rate of production of genetically modified foods, it is expected that in the near future, antibiotic resistant bacteria will be the leading cause of death and infertility of the human race.