INSTABILITY OF GENETIC MODIFICATION AS EARTH’S FUTURE FOUNDATION

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Humankind has been striving for innovation to solve Earth’s existing problems. Hunger, pests, diseases and construction are some difficulties that we are trying to reduce or to improve. As we all know, the world’s population has been consistently increasing through the last decades leading to food shortage. What make the problem worse, other than pollution, are pests that continually destroy our food source. Many have used pesticides for various pests but each year, pests find their way to infiltrate and destroy our commodity. On top of that, new diseases have been appearing lately which alarms every country. Immediate actions toward these illnesses were ineffective and it took a lot of time before finding the cure.

To solve these issues, some countries sought refuge in genetic engineering. Genetic engineering is a branch of engineering where DNA modification or insertion is done to acquire desirable traits. DNA or deoxyribonucleic acid is the blueprint of living things. It is where genes or traits, which are our biological information, can be found. Through this branch, insertion, deletion, combination or modification of these genes is done. The resulting organisms will contain a brand new trait which is not inherently possessed by the organism. They are now call GMO or genetically modified organisms.

In the past few years, scientists have been thoroughly studying this method. Most studies were done on animals and plants. There were modified animals where their milk contains different composition and some animals have glow in the dark features. They were used to study cancer and find a cure for it. Other plants have been modified also which resulted to big-fruit-producing plants, pest resistant plants and highly nutritious crops. According to Deepa Arya (2015), genetic modification of plants has several benefits like insect...
resistance, herbicide resistance, disease resistance and nutrition enhancements. Plants with insect resistance have been modified to contain genes that produce toxin against insects but are safe for human consumption. This resulted to a cheaper and more bountiful yield. Like insect resistance, herbicide resistant crops had their DNA modified by introduction of a gene that is resistant to herbicide. They can also be modified to be immune to certain crop diseases and have additional nutrient content. An example of this is the Golden Rice which contains more vitamin A than normal rice.

Though it seems that GMO has great potential, there were scientists who found this as threat. GM (genetic modification) is done by alteration of genetic material without the natural process. It means that it is like cross-breeding between two different species and therefore, the result will be unpredictable. Based from the study of J. Fagan et. Al(2014), the insertion of new trait to a surrogate cell is imprecise and could lead to unknown effect. According to them, introduction of foreign material can cause mutation and can be passed down to succeeding generation. Unknown effect will arise because the DNA reaction to the new trait is also unknown. It will not only change the replaced trait but it can also alter the other genes.

Some studies found out that mutations can cause ill effects. Deepa Arya (2015) stated that some of the risks are allergenicity, gene transfer, outcrossing, increase in anti-nutrients and environmental effects. Allergenicity is where allergic reaction occurs due to protein produced by GMO. It can happen when commonly allergenic foods were used to gather desirable genes. There is also a risk of gene transfer through human consumption. Since DNA is not completely degraded through digestion, the body might absorb the incorporated gene. Transfer of gene can also happen to same species especially plants
since they pollinate one another. Even if the GM is designated only for a specific use or consumption, chances of affecting the same species is possible.

Though the intention of GMO is good, the implementation of it is very risky without further study. Health and environment might be compromised for a short term convenience. Public safety and long term effects should be considered before we can depend on it in the future.

References
