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Short Communication

Development of Genetically Modified (GM) Food Plants and Animals

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DESCRIPTION

In 1972, Paul berg was first created genetically developed virus by combining DNA from monkey virus with that of bacterial virus. In 1973, Herbert Boyer at University of California created the first genetically developed bacteria at Stanford University by introducing DNA encoding antibiotic resistance to *E. coli* plasmid. One year later, Rudolf created but he was Postdoc at Princeton University and was the world's first genetically developed animal by introducing foreign virus DNA in mouse embryo genome. These results were concerned with scientific committee for potential risks from genetic engineering. The Committee was appointed by the National Science Academy in 1974 and evaluated the risk of genetic operation. The biggest concern was that some of the recombinant DNA molecules could turn out to be biologically dangerous. For example, in most genetic engineering experiments, recombinant molecules are first introduced into the bacterial *E. coli* [1-3]. The bacteria are then cultured for several hours to increase the number of recombinant molecules and they can replace other bacteria and genetic material. Some of them may be pathogens. Thus, recombinant DNA molecules introduced into *E. coli* may be widely used between humans, bacterial, plants or PET populations having unpredictable results. In contrast to the production of drugs by genetically developed organisms, the development of Genetically Modified (GM) food plants starting at the 1980s is a great basis in the 1980s. GM system development, marketing was treated and explain the GM food culture before adding animals. Before explaining the strengths and weaknesses of GM plants, two methods used to introduce the gene of interest into the plant to create GM plants-the use of the fine particle gun method (gene gun) and the bacterium *Agrobacterium tumefaciens* describes as a vector of DNA transformation. These two special methods were developed primarily to overcome the difficulty of penetrating strong plant cell walls [3,4].

In the gene gun method, a DNA molecule containing the gene of interest attaches to small gold or tungsten particles and is shot into plant tissue or individual plant cells under high pressure. Accelerated particles penetrate both the cell wall and the membrane. Within the cell, DNA separated and integrates into the plant genome of the cell nucleus. This method has been successfully used to genetically modify many crops such as wheat and corn. The second method of introducing foreign genes into plants using the bacterium *A. tumefaciens* utilizes the unique natural mechanism of infection of this phytopathogen. When this bacterium comes into contact with the roots of a plant, the Tumor-inducing plasmid (TDNA) is transferred to the plant's genome. Normally, some genes encoded by TDNA alter plant hormone levels, leading to uncontrolled cell division and plants tumor formation [4-7].

Genetic engineering of plants is achieved by cutting out of the plasmid DNA those genes that cause the tumor formation and replacing them with the specific genes that want to introduce into the plant. Therefore the bacterium acts as a vector, allows the transport of foreign genes into the plants. This method is especially effective for certain crops like potatoes, tomatoes and tobacco but not so much for the crops such as wheat and maize. What genes have been put into agricultural crops that make them increase productive and increase resistant to disease? One of the most well-known groups of genetically modified plants is the group contain a gene from bacteria that make the plant resistant to the herbicide with the trade name “Roundup.” Headquartered in St. Louis, Monsanto a listed American multinational pesticide and agricultural biotechnology company is a leading producer of Roundup and genetically engineered seeds [6,7].

Roundup kills plants by interfering with the synthesis of three amino acids that are essential for the plant growth, phenylalanine, tyrosine and tryptophan. The rationale behind genetically manipulating Roundup-tolerant crops is that spraying roundup kills the weeds but not crops, thus providing farmers with agricultural benefits [2,3]. The bacterial DNA coding for the resistance to Roundup was injected into soybeans using the gene gun method. In 1990, Monsanto Patented for crops that are genetically modified to be resistant to Roundup. The patent rights for the Monsanto to produce and sell seeds resistant to Roundup to get the approval from the United States Department of Agriculture (USDA) for soybeans resistant to Roundup took another 5 years to receive marketing approval from them. The Roundup resistant genetically modified crops

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worldwide has been rapid and impressive, reaching 150 million hectare or 800 thousand square miles annually and now including soybean, maize, cotton, canola and sugarbeet.

Many different kinds of GM seeds are now used in agriculture to produce plants with beneficial traits. In addition to herbicide resistance, these properties include improved shelf life, disease resistance, stress resistance and insect resistance. Examples of genetically engineered foods are apples modified to resist browning known as unbrown Arctic apples, genetically engineered cassava enriched with proteins and other nutrients (called Bio Cassava). Includes genetically engineered corn (called Drought Gard) and seed oil plants to combat drought tolerance, *Camelina sativa* as it accumulates high levels of beneficial long-chain omega-3 polyunsaturated fatty acids from fish oil. In addition, tobacco, corn, rice, and many other plants have been genetically engineered to express genes from the bacterium Bacillus thuringiensis, which encodes a natural protein that kills insects. These latter crops are called Bt corn, Bt rice, etc [4].

Recombinant DNA plants, which are most likely to improve human health worldwide, affect 250 million people worldwide and to combat vitamin A deficiency, which can cause blindness and even death. It is developed golden rice is one of the most common foods on the planet. In fact, almost half of the world's population lives primarily on rice. Vitamins as usual Scientists believed that supplementing everyone on the planet was unrealistic and the answer was to make a grain of rice that already contained vitamin A. Golden rice is designed to produce beta-carotene in rice grains. The human body converts beta-carotene to vitamin A. The name "Golden Rice" comes from the bright golden sparkle that beta-carotene adds to rice. The limit between humane and commercial use has been set at $10,000. Therefore, royalties will not be paid unless the golden rice farmer or future user earns more than $10,000 a year. In addition, farmers can retain and replant their patented seeds. In 2014, about 16 million farmers in 30 countries cultivated GM crops. Over 90% of these farmers were resource shortages in developing countries [5,7].

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