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Short Communication

Innovation of Biotechnology in the Food Industry

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ABOUT THE STUDY

Biotechnology is a broad field of study that employs cutting-edge technology to create biological processes, animals, cells, and cellular components. Biotechnologists' clinically new tools, industries, and products can be employed in research, agriculture, and other key disciplines. Biotechnology has existed since the drawn of mankind. By selection of genetically modified crops, domesticated animals, and other species, our predecessors may be credited with launching the agricultural revolution. The biotechnology potential was fully realized when Alexander Fleming found antibiotics and Edward Jenner produced vaccinations. Of fact, modern society would be impossible to imagine without the fermentation mechanisms that brought us beer, wine, and cheese. This article discusses how biotechnology can be used in the food and agriculture industries.

Modern biotechnology employs molecular techniques to create or improve commercial products and processes by utilizing entire or portions of live organisms. It is a relatively new and fast expanding discipline of molecular biology that began 40 years ago with the discovery of the first recombinant gene. By improving the meals we eat, the beverages we drink, the clothes we wear, and the medicines we take, these strategies are transforming the way we live in a variety of ways. They have also improved other elements of our lives by developing new detection tools for ailments such as arteriosclerosis, cancer, diabetes, Parkinson's disease, and Alzheimer's disease. One of the many facets of biotechnology that has a significant impact on society is its application in the food and agricultural industries.

Genetic engineering technologies have been widely used to increase the quantity of various nutrients (vitamins, essential amino acids, minerals, and phytochemicals) and improve their availability in plants. *Agrobacterium*-mediated transformation and micro projectile bombardment are the two main ways for transferring genes into plants for the development of transgenic plants. A genetically engineered strain of *Agrobacterium tumefaciens* is employed to introduce the transgene into the plants in the *Agrobacterium* mediated transformation process. Some *A. tumefaciens* strains have the ability to naturally transfer a fragment of their own DNA into plants in order to cause crown-gall tumors. The Ti (tumour inducing) plasmid carries the tumour induction genes in these crown gall inducing wild-type *A. tumefaciens* strains. *Agrobacterium* infects plant cells by transferring a section of Ti plasmid, known as T-DNA, to the cells [1].

Improvements in commercially important cattle breeds have been made possible through the transfer of genes from similar or unrelated breeds, due to advancement of genetic modification technologies. Biotechnology allows for genetic development in one generation rather than the many generations required by traditional animal husbandry approaches. Despite the fact that several techniques of gene transfer have been established, nuclear transfer, microinjection, viral vector infection, and embryonic stem cell transfer are still used in the generation of most GM animals. The nuclear transfer approach involves inserting all of the genetic material from the donor cell's nucleus into an immature fertilized egg that has had its nucleus removed. The embryo is then delivered to the foster mother, who grows it into a genetically similar animal to the donor cell [2].

Fermentation is the most common method for creating breweries. Somewhere at commercial level, various yeast strains are used in the manufacture of breweries. The light wine can be generated *via* a genetic engineering process. The ability to change yeast has been enabled by a foreign gene encoded with glucoamylase. Glucoamylase is produced by yeast during the fermentation process, which results in the conversion of starch to glucose. For the production of wine, yeast strains capable of commencing malolactic fermentation are employed. There are two steps in the wine synthesis process: 1) Yeast is used in primary fermentation to convert glucose to alcohol. 2) Bacteria are used in secondary fermentation to produce lactic acid with the highest acidity level. To reduce this issue, expensive divergent techniques are used. To remedy this problem, the malolactic gene from *Lactobacillus delbrueckii* is introduced into a strain of industrial yeast. This gene inhibits the conversion of malate, lowering the acidity of the wine [3-5].

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CONCLUSION

The shelf life of various fruit juices varies, tomatoes for instance, are consumed all around the world. Tomato should be gathered when they are fully grown and green in order to be transported. After early ripening, these are exposed to ethylene for cutting. Tomatoes mature quickly in high temperatures, while their flavour is damaged in cold temps. To remedy the problem, a California company named colgin genetically altered a tomato. They created flower sauer tomatoes to remedy the problem. Maturation is caused by the enzyme poly galacturonase, which is found in pectin. To minimize the amount of enzymes, scientists have genetically engineered tomatoes. Antisense RNA serves a specific role. In robust tomatoes, low levels of the enzyme demonstrate cell wall disintegration and impacts on pectin concentration. Those Flavr Savr tomato types have a firm quality, longer shelf life, and can be transported later.

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