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Brief Study of Biomarkers to Produce Genetic Modified Bacteria

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DESCRIPTION

Because of their simple genetics, genetically modified bacteria were the first organisms to be modified in the laboratory. These organisms are now used for a variety of purposes, including the production of large quantities of pure human proteins for use in medicine. In 1978, Herbert Boyer, working at the University of California, took a version of the human insulin gene and inserted it into the bacterium *Escherichia coli* to produce synthetic "human" insulin. It was approved by the US Food and Drug Administration four years later. Bacteria were the first organisms to be genetically modified in the laboratory due to the ease with which their chromosomes could be modified. Because of their ease of use, they became important tools for the development of other GMOs. Genes and other genetic information from various organisms can be added to a plasmid and then inserted into bacteria for storage and modification. Bacteria are inexpensive, easy to grow, clonal, multiply quickly, and can be stored at -80°C almost indefinitely. Once isolated, a gene can be stored within the bacteria, providing an infinite supply for research. The abundance of custom plasmids makes manipulating DNA extracted from bacteria relatively simple. Because of their ease of use, they are excellent tools for scientists studying gene function and evolution. The majority of DNA manipulation occurs within bacterial plasmids before being transferred to another host. Bacteria are the most basic model organisms, and studying *Escherichia coli* provided the majority of our early understanding of molecular biology. Scientists can easily manipulate and combine genes within bacteria to produce novel or disrupted proteins and study the effects on various molecular systems. Researchers combined genes from bacteria and archaea, providing insight into how these two groups diverged in the past. They have been used to test various synthetic approaches in the field of synthetic biology, ranging from genome synthesis to the creation of novel nucleotides. Bacteria have been used in food production for a long time, and specific strains have been developed and selected for industrial use. They can be used to make enzymes, amino acids, flavourings, and other food-related compounds. With the advent of genetic engineering, new genetic changes in these bacteria can be easily introduced. The majority of food-producing bacteria are lactic acid bacteria, and the majority of research into genetically engineering food-producing bacteria has focused on them. The bacteria can be modified to operate more efficiently, produce fewer toxic by-products, increase output, produce better compounds, and eliminate unnecessary pathways. Alpha-amylase, which converts starch to simple sugars, chymosin, which clots milk protein for cheese production, and pectinesterase, which improves fruit juice clarity, are all food products derived from genetically modified bacteria [1-4].

CONCLUSION

The vast majority of industrial products derived from bacteria are human proteins used in medicine. Because many of these proteins are impossible or difficult to obtain naturally, they are less likely to be contaminated with pathogens, making them safer. Prior to recombinant protein products, several treatments that could transmit diseases were derived from cadavers or other donated body fluids. Indeed, transfusion of blood products had previously resulted in unintentional HIV or hepatitis C infection of haemophiliacs; similarly, treatment with human growth hormone derived from cadaver pituitary glands may have resulted in Creutzfeldt-Jakob disease outbreaks.

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CONFLICT OF INTEREST

The author's declared that they have no conflict of interest.

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