



CAREER CONNECTION



Traditional and Modern Food Biotechnology

[By George Royal]

With the increase in the global demand for food and food products, scientists all over the world have been probing possible ways to increase crop yields and enhance nutritional value and taste, while protecting the environment by reducing the use of chemicals such as pesticides. This is where biotechnology comes into the picture by aiming to provide the technologies necessary to achieve those ends.

Food Biotechnology from Past to Present

Food biotechnology is not a new concept. It had already been employed long before the term itself was coined. For centuries, man has been exploiting biology to make food products such as bread, beer, wine, and cheese. For example, man had already learnt the method of fermenting fruit juices to concoct alcoholic beverages by around 6,000 B.C. Traditionally, the most common form of food biotechnology is the process in which seeds from the highest yielding and best tasting crops are planted in each successive year, resulting in increasingly better yields.

The process of obtaining the best traits in food products became much easier with the introduction of genetic engineering and gene cloning in modern food biotechnology about two decades ago. Now, by transferring and altering genes, scientists can remove certain genetic characteristics from a given food and move them into the genetic code of another in order to make the latter more resistant to diseases, richer in vitamins and minerals,

etc. Food biotechnology has also made plant breeding safer since single genes can now be transferred without moving thousands, making it possible to identify those defective genes which may be harmful or toxic.

In the United States and many other parts of the world, crops and food products, such as soybeans, corn, cotton, canola, papaya, and squash, produced through biotechnology have become significant components of people's diets.

What Are the Benefits of Bioengineered Food?

Nutrition: Foods that are genetically engineered or produced through food biotechnology tend to contain more vitamins and minerals since they are made from a combination of select traits that are considered to be the best.

Safety: Foods produced with biotechnology are much safer because the possibility of toxin content is minimal in comparison to the

possible toxins in traditionally grown foods. This is because any gene containing toxins or suspected of being toxic is removed during the transfer and alteration of genes.

Better Yield: Food biotechnology seems to increase crop yields by introducing food crops that are more resistant to harsh climates, decreasing the amount of diseased units, and improving the productivity of crops. This becomes very practical considering the amount of food demanded and consumed globally.

Reduced Need for Chemical Insecticides: Food biotechnology also opens the possibility of producing crops that are more resistant to diseases and pests. For example, the gene for a bacterial protein which kills insect pests has successfully been introduced into a range of crops, reducing the need for chemical insecticides. Pest-protected crops also allow for less potential exposure of farmers and groundwater to chemical residues.

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