THE NATURE OF FOOD from Lifestar

THE GENESIS OF FOOD AND FOOD SUBSTITUTES

According to the *Encarta World English Dictionary* the following definition is provided:

food *n*

- material that provides living things with the nutrients they need for energy and growth.
- substances, or a particular substance, providing nourishment for people or animals, especially in solid as opposed to liquid form.

- something that sustains or stimulates the mind or soul.

According to an article in the Encarta Encyclopedia:

***Food**, anything eaten to satisfy appetite and to meet physiological needs for growth, to maintain all body processes, and to supply energy to maintain body temperature and activity. Because foods differ markedly in the amount of the nutrients they contain, they are classified on the basis of their composition and the source from which they are derived*

***Food Processing and Preservation**, branch of manufacturing that transforms raw animal, vegetable, or marine materials into tasty, nutritious, and safe food products. The industry has its roots in ancient times, as humans have always needed to obtain food and store a portion for later use. Prehistoric humans may have dried fruits in the sun and stored meat in cold areas, such as caves. The modern food processing and preservation industry was born in 1809, when French chef and inventor Nicolas Appert, searching for a better way to provide food for Napoleon's army, devised a method for sterilizing food in tightly sealed glass bottles.*

Today a wide variety of methods are available to maintain and enhance the appearance and taste of food. Food processing and preservation methods also create products that are convenient for consumers, such as products that are ready to eat or require minimal preparation and cooking. Combining these methods with modern distribution networks makes seasonal crops available year-round in grocery stores all over the world.

PROCESSING AND PRESERVATION METHODS

Food processing encompasses all the steps that food goes through from the time it is harvested to the time it arrives on supermarket shelves. At simplest,

processing may involve only picking, sorting, and washing fruits and vegetables before they are sent to market. Some processing methods convert raw materials into a different form or change the nature of the product, as in the manufacture of sugar from sugar beets, oil from corn or olives, or cheese from milk. Processing may also involve an extremely complex set of techniques and ingredients to create ready-to-eat convenience foods.

Food preservation refers specifically to the processing techniques that are used to keep food from spoiling. Spoilage is any change that makes food unfit for consumption, and includes chemical and physical changes, such as bruising and browning; infestation by insects or other pests; or growth of microorganisms, such as bacteria, yeast, and molds.

Some food preservation techniques destroy enzymes, proteins that are present in all raw foods, which are responsible for the chemical and physical changes that naturally occur after harvesting. Food preservation techniques also help eliminate the moisture or temperature conditions that are favorable for the growth of microorganisms. As they multiply and grow, microorganisms are capable of causing food-born illness. They also break down foods, producing unpleasant changes in taste, texture, and appearance—changes that we recognize as spoilage. Although people have known about spoilage and some preservation methods to prevent it for centuries, it was only in 1857 that French chemist Louis Pasteur demonstrated the role of microorganisms in the process.

Food Additives:

Food Additives are chemicals that are added to food in small amounts. Direct additives are added deliberately during processing to make food look and taste better, maintain or improve nutritive value, maintain freshness, and help in processing or preparation. Some additives help preserve food by preventing or slowing chemical changes and the growth of microorganisms in food. As many as 3000 substances are approved by the Food and Drug Administration (FDA) for use as direct additives. An additional 10,000 substances are present in foods as indirect additives. These substances enter food incidentally during handling or from processing equipment or packaging.

Food additives have been used for thousands of years. The salts and other chemicals used in curing are additives, and before the advent of canning and mechanical refrigeration, chemical additives were the only means of preservation available. Additives were not limited to use as preservatives, however. People in ancient Rome added certain chemicals to wine and cooked vegetables to improve the color of these foods. Other examples of additives that have been used since ancient times include yeast and baking powder used as leavening in baked goods.

In the 20th century, advances in the knowledge of chemistry have greatly

expanded the number of additives that are used in foods. Such recent additions to the ranks of food additives include artificial sweeteners, such as aspartame and saccharin; fat replacements, such as Simplesse; and colors, such as FD&C yellow No. 5, which is used in beverages, ice cream, cereals, and other foods.

The development of new chemical additives has also played an enormous role in the growth of convenience foods. Additives that help ensure the quality of convenience foods include anti-caking agents, such as calcium silicate and magnesium stearate, to prevent lumps in dry mixes; humectants, such as glycerol, propylene glycol, and sorbitol, to help retain moisture in breads and cakes; emulsifiers, such as egg yolk, lecithin, and monoglycerides, which bind oil and water to improve the uniformity and smoothness of foods; and stabilizers and thickeners, such as guar gum, carrageenan, and gelatin.

As the use of food additives has grown, so has public concern about the type and amount of these additives and their potential to cause cancer or other illnesses in human beings. Some studies have suggested that saccharin, nitrites, and other additives may cause cancer, but these results remain controversial. At the same time, some additives may actually provide a health benefit. For example, the vitamins used to fortify foods such as bread and milk are additives."