



Why are Foods Processed?

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Background

“Food processing” is a term that describes the action of transforming a raw agricultural commodity from its original form into a specific food product (e.g., apples into applesauce). Food processing encompasses a wide range of actions, including simple processes like washing, chopping (figure 1), and freezing, to more complex ones like fermenting, cooking, canning (figure 2), and packaging (EUFIC 2017 and Floros et al. 2010). Not only does food processing include physical changes to a food, such as slicing and dicing vegetables, it can also incorporate a chemical component, as when food-preserving ingredients are added or when meats are cured for flavor and safety. Processing food is necessary for us to consume the foods we eat each day.



Figure 1. Cutting up raw apples into slices is an example of processing. (Photo courtesy of [Pixabay.com](https://www.pixabay.com))



Figure 2. Home-canning preserves produce for longer periods of time.” (Photo courtesy of Lester Schonberger)

Why are Foods Processed?

Foods are processed for a wide variety of reasons using various methods. Some of the most common reasons for processing food include to:

Preserve Food and Extend Shelf-Life

Shelf-life is the amount of time, from harvest to consumption, that a food is deemed acceptable to eat. Foods such as fruits, vegetables, and meats typically have a short shelf-life and may lose quality or spoil quickly. Processing foods by drying, smoking, or adding preservatives can extend their shelf-life. Adding preservatives allows foods to be kept for longer periods of time both in stores and in consumers’ homes. Processing foods to extend shelf-life also reduces food waste, especially when there are large quantities of a product at harvest. For example, excess cucumbers can be made into pickles, which have a much longer shelf-life.

Increase Safety

Processing technologies such as pasteurization, irradiation, and high-pressure processing reduce potential pathogens on foods, thus decreasing the likelihood of foodborne illness. For example, milk and juices are pasteurized to make them safer.

Enhance Flavor and Taste

Through processing, flavors can be added to food products to enhance their taste or to create a whole new product. A food's smell and texture also play a role in flavor. Different types of food processing can be used to create different food shapes and textures, such as pasta noodles (figure 3) and puffy cheese snacks.



Figure 3. Pasta noodles can be processed to create different shapes and to incorporate different ingredients. (Photo courtesy of rawpixel from Pixabay.)

Improve Nutrient Content

Vitamins, minerals, or other nutrients may be added to foods to increase their nutritional value. Some nutrients are lost during processing but can be added back to foods — a process known as enrichment. For example, some grain products, like flour and rice, are enriched to replenish nutrients that were lost during initial processing steps. Nutrients that were originally not in a food can also be added for a designated benefit through a process known as fortification. In addition, undesired nutritional aspects of foods (e.g., excess sugar, sodium, fats) can be reduced through food processing.

Convenience

Foods may be processed so that they become easy and convenient to prepare or to consume. Fruits and vegetables may be pre-cut and pre-portioned for

immediate consumption. Meats may be cut and pre-marinated for ease of preparation by the consumer. (figure 4). Additionally, different types of packaging make some foods easier to eat on-the-go.



Figure 4. Meats can be pre-cut and packaged for convenience purposes. (Photo courtesy of [Pixabay.com](https://www.pixabay.com/).)

What are Examples of Processed Foods?

Milk Fortification

In the United States, dairy products are pasteurized to increase their safety and shelf life. Pasteurized cow's milk is typically fortified with vitamin D to prevent vitamin D deficiencies (CDC 2024) by assisting the calcium that is already present in the milk to bind to and strengthen bones.

Emulsifiers in Mayonnaise

Mayonnaise is an oil-in-vinegar emulsion. An emulsion is a mixture of liquids that do not naturally mix together (like oil and water). To ensure the oil and vinegar remain mixed in mayonnaise, an emulsifier is added to prevent the mixture from separating. Egg yolk is the emulsifier used in mayonnaise.

Salad Meal Kits

Salads take time to prepare. To encourage healthy eating, consumers may purchase salad meal kits that make salad preparation quick and easy. Lettuce can be bought pre-washed and pre-chopped, with other salad components also included (i.e., other toppings, proteins, and dressing). The packaging of these kits also incorporates aspects of food processing, including separation of individual salad ingredients from one

another to maintain freshness. There is a physical barrier between croutons and lettuce, for example, to ensure the croutons do not become stale. A bowl and utensils can even be incorporated into the packaging to provide further convenience.

What Concerns are Raised Regarding Food Processing?

How Often are Foods Processed?

Food processing is utilized every single day. It happens along every step of our food system, even with homegrown produce. The vast majority of the foods we consume have been processed in some way.

Are Processed Foods Less Nutritious?

Some consumers have the misconception that “processed foods” are foods with little nutritional value. However, processed foods can still be nutritious. While some nutrients can be lost during food processing, the processing of foods often incorporates additional beneficial nutrients. In some cases, processed foods have sodium or sugar added for flavor or to aid in preservation/shelf life, therefore, if you would like to limit these in your diet, it is important to always read the food ingredient label. Ultra-processed foods (e.g., soda, ice cream, mass-produced breads and buns, hot dogs) should be consumed minimally; consistent consumption of these products can lead to health issues (Monteiro et al., 2019).

Are Processed Foods Harmful to My Health?

There is also the misconception that processed foods contain added ingredients (preservatives, sweeteners, flavor enhancers, etc.) that are harmful to one’s health. However, food and color additives are extensively studied, strictly regulated, and monitored by the U.S. Food and Drug Administration (FDA 2023). Food additives are used to maintain safety and freshness, to improve or maintain nutritional values, and/or to improve taste, texture, and appearance (FDA 2023). For example, pectin is added to foods like sauces, jams, and jellies as a thickener.

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References

- CDC (Centers for Disease Control and Prevention). 2024. “Cow’s Milk and Milk Alternatives.” <https://www.cdc.gov/infant-toddler-nutrition/foods-and-drinks/cows-milk-and-milk-alternatives.html>.
- EFIC (European Food Information Council). 2017. “Processed Food: What Is the Purpose of Food Processing?” <https://www.efic.org/en/food-production/article/processed-food-qa>.
- FDA (U.S. Food and Drug Administration). 2023. “Types of Food Ingredients.” <https://www.fda.gov/food/food-additives-and-gras-ingredients-information-consumers/types-food-ingredients>.
- Floros, J., Newsome, R., Fisher, W., Barbosa-Cánovas, G. V., Chen, H., Dunne, P. C., German, J. B., et al. 2010. “Feeding the World Today and Tomorrow: The Importance of Food Science and Technology.” *Comprehensive Reviews in Food Science and Food Safety*. 9 (5): 572–599. <https://doi.org/10.1111/j.1541-4337.2010.00127.x>.
- Monteiro CA, Cannon G, Levy RB, Moubarac JC, Louzada ML, Rauber F, Khandpur N, Cediel G, Neri D, Martinez-Steele E, Baraldi LG, Jaime PC. Ultra-processed foods: what they are and how to identify them. *Public Health Nutr*. 2019 Apr;22(5):936-941. doi: 10.1017/S1368980018003762. Epub 2019 Feb 12. PMID: 30744710; PMCID: PMC10260459. <https://pubmed.ncbi.nlm.nih.gov/30744710/>.

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