

Steps Involved in Food Processing and its Benefits and Drawbacks

Shuji Ogino*

Department of Food and Information Technology, Comsats University Islamabad, Sahiwal, Pakistan

Editorial

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***For Correspondence:** Shuji Ogino
Department of Food and Information Technology, Comsats University Islamabad, Sahiwal, Pakistan

E-mail: oginoshuji2@gmail.com

EDITORIAL NOTE

The process of transforming agricultural materials into food or changing one type of food into another is known as food processing. From grinding grain to produce raw flour to home cooking to advanced industrial procedures used to make convenience items, food processing encompasses a wide range of activities.

Some food processing technologies play a vital role in minimising food waste and enhancing food preservation, hence lowering agriculture's overall environmental impact and increasing food security.

Most foods require primary food processing to make them edible, while secondary food processing transforms the components into recognisable dishes like bread [1]. Tertiary food processing has been criticised for causing obesity and overnutrition by including too much sugar and salt, too little fibre, and being generally unhealthy in terms of human and farm animal dietary demands [2].

Processes

Primary food processing: Primary food processing converts agricultural products such as raw wheat kernels and livestock into edible products. Ingredients generated through ancient methods such as drying, threshing, winnowing, and milling grain, shelling nuts, and slaughtering animals for meat fall under this category [3]. Deboning and chopping meat, freezing and smoking fish and meat, extracting and filtering oils, canning food, food irradiation preservation, candling eggs, and homogenising and pasteurising milk are all examples of this operation.

Contamination and spoiling issues in primary food processing can pose serious public health risks since the resultant foods are so extensively consumed. Many types of processing, on the other hand, lead to increased food safety and a longer shelf life before spoilage [4]. To limit the risk of injury in commercial food processing, control systems such as Hazard Analysis and Critical Control Points (HACCP) and Failure Mode and Effects Analysis (FMEA) are used.

Secondary food processing: The process of making food from ready-to-eat components is known as secondary food processing. Baking bread, whether at home, at a small bakery, or in a large facility, is an example of secondary food processing [5]. Secondary food processing includes fermenting fish and creating wine, beer, and other alcoholic beverages.

Sausages are a form of secondary processed meat created by comminuting (grinding) already processed meat. Cooking processes are widely used to define the majority of secondary food processing methods known to humankind [6].

Tertiary food processing: The commercial manufacturing of what is popularly referred to as processed food is referred to as tertiary food processing [7]. TV dinners and reheated aeroplane meals are examples of ready-to-eat or heat-and-serve cuisine.

Benefits

Toxin elimination, preservation, ease of marketing and distribution duties, and increased food uniformity are among advantages of food processing. Furthermore, it enhances the annual availability of many goods, allows for long-distance transportation of delicate perishable items, and makes many types of foods safe to eat by preventing rotting and harmful microorganisms. Without sophisticated food processing procedures, contemporary supermarkets would not exist, and long journeys would be impossible [8].

Processed meals are less likely to deteriorate quickly than fresh foods, and thus are better suited for long-distance travel from the source to the consumer. Some processed foods, when initially developed, contributed to ease food shortages and enhance population nutrition by making numerous new cuisines available to the masses.

Food-borne illness can also be reduced by processing [9]. Fresh materials, such as fresh fruit and raw meats, are more likely to contain pathogenic microbes capable of causing serious sickness (e.g. *Salmonella*).

Because of food processing, the enormously diverse modern diet is only genuinely conceivable on a large scale. Modern eaters have easy access to a vast range of food previously unfathomable to their forefathers, thanks to transportation of more exotic foods and the removal of much hard labour.

Drawbacks

The nutritional density of food can be lowered as a result of processing. The amount of nutrients lost is determined by the food and the manner of preparation. Heat, for example, degrades vitamin C ^[10]. As a result, canned fruits have less vitamin C than fresh fruits. In 2004, the USDA performed a research on nutrient retention, resulting in a table of foods, preparation levels, and nutrition.

According to new study, the relevance of a rich microbial ecosystem in the gut to human health is jeopardized by excessive food processing (not fermentation of foods).

Another safety risk is the use of certain food additives. The health concerns of any specific addition vary widely from person to person; for example, diabetics are put at risk when sugar is used as an additive. Only European Food Safety Authority (EFSA) authorised food additives (e.g., sweeteners, preservatives, stabilisers) are permitted in food items at specific amounts in the European Union ^[11].

Approved additives are given an E number (E for Europe), which makes it easier to communicate about food additives in the ingredients list in all of the EU's languages. As new information about the impacts of chemical additions becomes available, legislation and regulatory policies are adjusted to make processed foods safer.

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