

# Microbial Activity that Caused Rapid Spoilage

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## Description

The benefits of food processing include the removal of toxins, preservation, facilitation of marketing and distribution tasks and enhancement of food consistency. Additionally, it increases the annual availability of many foods, enables the transportation of delicate perishable foods over long distances and renders many types of foods safe to eat by deactivating spoilage and harmful microorganisms. Modern supermarkets and long-distance journeys would not be possible without modern food processing methods. Processed foods are typically less susceptible to early spoilage than fresh foods and are better suited for long-distance transportation from the source to the consumer.

## Canning techniques

Commercial food processing employs control systems such as Hazard Analysis and Critical Control Points (HACCP) and Failure Mode and Effects Analysis (FMEA) to reduce the risk of harm. Salt preservation was widespread for foods consumed by soldiers and sailors until the introduction of canning techniques. Evidence of these methods can be found in the writings of ancient Greek, Chaldean, Egyptian and Roman civilizations, as well as archaeological evidence from Europe, North and South America and Asia. These traditional processing techniques remained largely unchanged until the industrial revolution. Examples of processed meals date back to preindustrial times and include dishes like Cornish pasties and haggis, which are considered processed foods both historically and in modern culture. Food processing involves the transformation of agricultural products into food or one form of food into another. It encompasses various methods, from grinding grain to make raw flour to home cooking to complex industrial techniques used to create convenience foods. Some food processing methods play significant roles in reducing food waste and improving food preservation, thus reducing the overall environmental impact of agriculture and enhancing food security. Primary food processing is necessary to make most foods edible and secondary food processing transforms the ingredients into recognizable foods, such as bread. Tertiary food processing has been criticized for promoting over nutrition and obesity, containing excessive sugar and salt, insufficient fiber and

otherwise being unhealthy in terms of human and livestock dietary requirements. Primary food processing converts agricultural products, such as whole wheat grains or livestock, into something that can ultimately be consumed. This category includes ingredients produced by ancient processes such as drying, milling, winnowing and milling grains, shelling nuts and slaughtering animals for meat. It also includes deboning and slicing meat, freezing and smoking fish and meat, extracting and refining oils, canning food, preserving food through irradiation and candling eggs, as well as homogenizing and pasteurizing milk. Contamination and spoilage issues in primary food processing can lead to significant public health risks, as the resulting foods are so widely used. However, many processing methods contribute to improved sanitation and longer shelf life before the food spoils.

## General nutrition of populations

Food processing companies marketed their products specifically to middle-class working wives and mothers. When first introduced, some processed foods helped alleviate food shortages and improved the general nutrition of populations by making many new foods available to the masses. Processing can also reduce the incidence of foodborne illness. Fresh materials, such as fresh produce and raw meats, are more likely to harbor pathogenic microorganisms such as Salmonella capable of causing serious illnesses. Mass production of food is much cheaper overall than individual production of meals from raw ingredients. Therefore, there is a significant profit potential for manufacturers and suppliers of processed food products. Individuals may see a benefit in convenience but rarely perceive any direct financial cost savings in using processed foods compared to home preparation. Secondary food processing is the typical course of making food from ingredients that are ready to use. Baking bread, whether made at home, in a small bakery or in a large factory, is an example of secondary food processing. Fermenting fish and producing wine, beer and other alcoholic products are traditional forms of secondary food processing. Sausages are a common form of secondary processed meat, formed by comminution grinding of meat that has undergone prior primary processing. Most of the secondary food processing methods known to humanity are commonly

described as cooking methods. Food processing dates back to ancient times when rudimentary processing included aging, sun drying, preserving with salt and various types of cooking like roasting, smoking, steaming and oven baking. Such basic food

processing involved chemical and enzymatic changes to the basic structure of food in its natural form and also created a barrier against surface microbial activity that caused rapid spoilage.