



SUMMARY

Numerous food products owe their production and characteristics to the activity of microorganisms. Fermented foods are foods that have been subjected to the action of micro-organisms or enzymes, so that desirable biochemical changes cause significant modification to the food. The term fermentation has been defined as the metabolic process in which chemical changes are brought about on an organic substratum, whether carbohydrate, protein, or fat, through the action of enzymes liberated by specific living microorganisms. Food fermentations are classified into those in which the main products are organic acids and those in which ethanol and carbon dioxide are the primary products. Lactic acid fermented foods such as cultured milk products, sauerkraut, pickles, fermented sausages and fermented cereal-legume foods, and ethanolic fermented foods such as, bread and alcoholic beverages are the most important commercial fermented foods. The fermentation of foods may be by bacteria, yeasts, molds, or combinations of these organisms. Lactic acid bacteria (LAB) such as, *Lactobacillus*, *Pediococcus*, *Streptococcus*, *Lactococcus*, *Leuconostoc* and *Carnobacterium* are the most commonly used bacteria for fermentation of foods. Their importance is associated mainly with their safe metabolic activity while growing in foods utilizing available sugar for the production of organic acids and other metabolites. However some other species such as *Bacillus*, *Staphylococcus*, etc., are also used in some products. The most familiar yeasts used in fermented foods are



[Saccharomyces cerevisiae](#) and *Debaryomyces hansenii*. Other yeast cultures like [Pichia](#), [Kluyveromyces](#), *Torulopsis*, *candida*, *Trichosporon*, *Debaryomyces*, *Rhodotorula* and *Hansenula* are naturally present or added to create special flavors in the fermented foods. Molds like, *Aspergillus*, *Rhizopus*, *Mucor*, *Actinomucor*, *Amylomyces*, *Neurospora*, *Penicillium* and *Monascus* are used in the manufacture of fermented foods. Microorganisms that produce a single main by-product are termed homofermentative, whereas those that produce mixed products are called heterofermentative.

The term “biological ennoblement” has been used to describe the nutritional benefits of fermented foods. Fermented foods are found to be more palatable, more easily assimilated by the human digestive tract, contain beneficial antibiotics, possess therapeutic properties, contain probiotics and regular consumption of some types claimed to increase the longevity of human beings. Fermentation plays a critical role in food safety and preservation through formation of inhibitory [metabolites](#) such as [organic acid](#) ([lactic](#), [acetic](#), [formic](#), and [propionic acid](#)), [ethanol](#), [bacteriocins](#), etc., often in combination with decrease of water activity (by drying or use of salt). Besides, microbial food cultures help to improve food safety through inhibition of [pathogens](#) or removing of toxic compounds.