**Fermented Foods**

**Fermentation**

Fermentation is a process in which microorganisms, in the absence of oxygen, generate energy by oxidizing carbohydrates and related compounds.

Fermentation has been used since ancient times as an important method for preserving food. Vegetables, fruits, cereals, milk, and other raw materials have been treated in special ways in order to promote the growth of beneﬁcial microorganisms while inhibiting the growth of deteriorating and pathogenic microorganisms.

Fermentation will preserve the food, and it will also enhance the taste, aroma, texture, and nutritional value of the product. It is also important that the fermentable carbohydrates are completely utilized by the fermenting microorganisms and thereby made unavailable for the undesirable microorganisms. In some products the addition of salt will increase the shelf life of the products by lowering the water activity.

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Louis Pasteur, in the middle of 19th century, contributed significantly to the understanding the phenomenon of fermentation; he established the role of microbes in fermentation and also proved that there are many different kinds of fermentations

Food fermentation has been used for centuries as a method to preserve perishable food products. The raw materials traditionally used for fermentation are diverse and include fruits, cereals, honey, vegetables, milk, meat, and ﬁsh.

At present, we have a number of fermented foods and drinks including fermented milks, fermented cereals, fruits, vegetables, fish, meat, and many other mixed products, which emerged in very early times.

**Different types of fermented foods are**

There are many different types of fermented foods consumed around the world, including:

1. **Fermented Milk** - Fermented milk products are *Dahi, butter milk, yogurt, kefir, kumys (kumiss), cheese*
2. **Cereal-and legume-based Fermented Foods** - Cereal-and legume-based Fermented Foods products are *Bread, idli, dosa.*
3. **Soy Food**- Soy food products are *Soy sauce, miso, tempeh, sufu*
4. **Fermented fruits and vegetables-** Fermented fruits and vegetables products are *sauerkraut, Kimchi, pickled vegetables*
5. **Fermented fish-** Fermented fish products are *fish sauces, fish paste, or salted fish*
6. **Fermented meat-** Fermented meat products are *dried beef or beef hams, sausage .*

**Advantages and health benefit of fermented food**

In the past, the beneficial effects of fermented foods on health were unknown, and so people primarily used fermentation to preserve foods, enhance shelf life, and improve flavour.

Fermented foods became an important part of the diet in many cultures, and over time fermentation has been associated with many health benefits. Because of this, the fermentation process and the resulting fermented products have recently attracted scientific interest.

In addition, microorganisms contributing to the fermentation process have recently been associated with many health benefits, and so these microorganisms have become another focus of attention.

**Lactic acid bacteria** **(LAB)** have been some of the most studied microorganisms. During fermentation, these bacteria synthesize vitamins and minerals, produce biologically active peptides with enzymes such as proteinase and peptidase, and remove some non-nutrients. Compounds known as biologically active peptides, which are produced by the bacteria responsible for fermentation, are also well known for their health benefits.

Fermentation not only gives fermented products a unique sensory signature but **can also enhance the nutritional value and digestibility of foods in several ways.**

The process of fermentation can produce vitamins, anti-oxidants, and molecules that lower blood pressure and inflammation. Beyond nutritional value, fermented foods which contain live bacteria may influence the intestinal microbiota. Although the live microorganisms found in fermented food tend to pass through the gut transiently, if consumed regularly, they may be able to influence the gut microbiota by out-competing undesirable microbes. Prof. Hutkins emphasizes that **there is a link between fermented food consumption and a reduced risk of some diseases.** “Clinical studies focused on the benefits of fermented dairy products such as yogurt show improvements in bone health, blood pressure, and reduced risks of colon cancer and heart disease.”

References

1. Edward R. Farnworth, Handbook of fermented functional foods, Second edition.
2. William C Frazier, Food Microbiology, fifth edition.