



Microbial Food Cultures

IDF Factsheet – December 2014

Fermented Foods

Fermented foods are associated with local and traditional food consumption, as well as global trade and worldwide consumption.

The growing body of evidence with regard to microorganisms and their role in the food matrix, history of safe use, technological function, preservation effect and improved organoleptic quality of certain foods, has led to industrial application of the process of fermentation. This started in the early twentieth century through use of specific dedicated microbiota with various levels of characterization.

Fermentation

Fermentation as a biotechnological process was initially described in the mid-19th century by Louis Pasteur as “la vie sans l’air”, the metabolic process of deriving energy from organic compounds without the involvement of an exogenous oxidizing agent. Fermentation is a metabolic process that converts sugar to acids, gases and/or alcohol. It occurs in microorganisms as well as at the cellular level in living organisms, plants, animals and humans.

Fermentation as a process for manufacturing fermented foods is used more broadly today than the historical definition of fermentation by Louis Pasteur. Fermented foods have been subjected to the action of micro-organisms during which desirable biochemical changes occur, causing significant modification to the food matrix. There is a low risk of undesirable properties being transferred and this must be protected against.

Fermentation plays different roles in food processing such as:

- Preservation of food through formation of inhibitory metabolites such as organic acids, often in combination with decreased water activity (by drying or use of salt)
- Improved food safety through inhibition of pathogens or removal of toxic compounds (e.g. Cassava fermentation in Africa)
- Improving and /or preserving nutritional value and organoleptic characteristics of the food.



Microbial Food Cultures

Microbial food cultures (MFC) are live bacteria, yeasts or moulds used in food production. MFC preparations can be natural cultures or formulations, consisting of one or more microbial species and/or strains. These formulations will

include media components carried over from the fermentation and added components which are necessary for their survival, storage and standardization, and facilitating their application in the food production process.

Most of the dairy food products as we know them would not exist without fermentation. Incorporation of MFC is essential in the production of dairy products such as yogurts, cheeses, and dairy beverages such as Ayran and Kefir.

Some MFC play a specific beneficial role on human health and are referred to as Probiotics.

References

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What is the dairy industry doing?

Fermentation is a key biotechnological step for most of the dairy processes. IDF gathers information from numerous research projects, product development projects and data generation efforts on this subject.

Most specifically, IDF, together with the European Food and Feed Culture Association (EFFCA), has developed an inventory of microbial cultures that are safe for use in food production, and has a dedicated specific expert group working to continuously update the inventory based on thorough evaluation of new scientific evidence.

