

## Protective Cultures

The term „Protective Cultures“ has been applied to [microbial food cultures \(MFC\)](#) exhibiting a metabolic activity contributing to inhibit or control the growth of undesired microorganisms in food. These undesired microorganisms could be pathogenic or toxigenic bacteria and fungi but spoilage causing species may also be included.

Protective cultures are considered as an integral part of starter cultures, which are the traditional tools of food technology used to produce fermented food such as cheese, yoghurt, certain sausages, wine etc.. It is a general property of fermented foods that these possess a longer shelf life than the non-fermented raw materials (for instance cheese, has a much longer shelf-life than milk). This property is the result of the active metabolism of the fermenting culture, conducting its actions through a complex system of competition for nutrients and binding sites and by production of inhibitory metabolites like organic acids, hydrogen peroxide, diacetyl, reuterin and bacteriocins.

Depending on the specific cultures used the cultures commonly form numerous properties that are of sensory and nutritive value to the food product, too. In this way the same starter culture species used in fermentation processes have also been applied to food in order to make use of the “bioprotective” potential with or without sensory impact. For these starter cultures the term protective culture, has been applied.

Their usage is not limited to “classic” fermented foods but also plays an important role when their metabolic activities take place in food with a neutral pH and high water activity, which are subject to increased risk of growth of food pathogens. The application of “protective cultures” constitutes an additional measure to improve food hygiene and should not permit a neglecting of any measure of good manufacturing practice ensuring the high standard of food safety.

The German Research Foundation (Vogel et al. 2011) made the following definition:

*“Protective cultures are preparations consisting of live microorganisms (pure cultures or culture concentrates) that are added to foods with the aim of reducing risks by pathogenic or toxigenic microorganisms”.*

It is the opinion of EFFCA that protective cultures are an integral part of starter cultures rather than additives, as proposed by DG SANCO (2006). It is clear that these cultures develop their protective and beneficial potential, like all starter cultures, as a result of their metabolic activity in or on the food. EFFCA acknowledges that preformed inhibitory metabolites in the culture preparation should not be the principle effect.

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**Vogel, R. F., W. P. Hammes, M. Habermeyer, K. H. Engel, D. Knorr, and G. Eisenbrand, 2011.** *Microbial food cultures - opinion of the Senate Commission on Food Safety (SKLM) of the German Research Foundation (DFG).* *Mol. Nutr. Food Res.*, 55, 654-662.  
**SANCO, 'D1(06)D/413447, Summary record of the Standing Committee on the Food Chain and Animal Health', held in Brussels on 14 December 2006**

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**About EFFCA**

The European Food & Feed Cultures Association - EFFCA - was formed in 1992 with the objective of enhancing public knowledge of the use of microbial cultures within the food chain through accurate, fair and scientifically based information. EFFCA represents sixteen manufacturing companies accounting for more than 95% of the microbial food cultures, including probiotics, sold in Europe.

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