

FOOD CULTURES ARE FOOD INGREDIENTS



EFFCA
European Food & Fermentation Cultures Association

EXECUTIVE SUMMARY

Food cultures are safe, live microorganisms intentionally added to food for the purpose of controlled fermentation. They play a vital role in delivering consistent food quality while enhancing taste, texture, safety, and shelf life. Food cultures' well-established ability to inhibit pathogens and spoilage organisms makes them a cornerstone of modern food safety and preservation strategies.

Under EU food law, food cultures are regulated as food ingredients rather than food additives. This distinction reflects both their biological nature and their long history of safe use. Reclassifying food cultures as additives would be scientifically inappropriate and disproportionate, leading to increased regulatory burden, enforcement challenges, reduced innovation, higher food waste, and potential consumer confusion.

As regulatory interpretations evolve across Member States, greater clarity is needed at EU level to ensure the consistent application of existing food law. A pragmatic, science-based approach is essential to maintain food cultures as ingredients while supporting Europe's innovation capacity and sustainability objectives.

Practical solutions already exist. Clear and transparent labelling, such as the use of the term 'protected by fermentation', targeted regulatory clarification, and robust industry self-regulatory guidelines can ensure consumer information and food safety, in line with the General Food Law principle that food business operators are responsible for the safety of their products.

This brochure explores the role of food cultures in fermentation, their contribution to food safety and sustainability, and the regulatory considerations needed to safeguard their continued use within a harmonised EU framework.



WHAT ARE FOOD CULTURES

DEFINITION

Food cultures are safe ^[1]live **bacteria, yeasts or filamentous fungi** (moulds) used in food production and are themselves a **food ingredient**.

Food cultures preparations are formulations, consisting of concentrates^[2] containing one or more live and active microbial strains of one or more microbial species, including unavoidable metabolites and media components carried over from the fermentation and components (e.g., carbohydrates, organic acids, minerals, vitamins) which are necessary for their survival, storage, and to facilitate their application in the food.

The term food cultures includes, but is not limited to: starter cultures, dairy starters, yoghurt starters, ripening cultures, meat cultures, sausage starters, wine cultures, plant-based starters, malolactic cultures, sourdough starters, probiotics, lactic acid bacteria, etc. ^[3]

Microorganisms have been used to ferment food for centuries, and fermentation is one of the oldest methods of food processing and preservation. This biological process enhances the **nutritional, sensory, and safety qualities** of food by improving flavour, aroma, texture, and appearance while preventing spoilage and inhibiting pathogens.

Microorganisms in food cultures are **selected based on their specific properties and beneficial effects on food**, such as:

- Food preservation
- Texture and taste building and improvement
- Food safety enhancement
- Meeting shelf life

1. Bourdichon, F. et al. (2022). Inventory of Microbial Food Cultures with Safety Demonstration in Food Products. Bulletin of the IDF No. 514, International Dairy Federation, pp. 1–175.

2. > 10⁸ CFU/g or ml for bacteria and yeasts and > 10⁷ CFU/g for filamentous fungi.

3. For more information, please refer to EFFCA (2026), [Criteria for the Safety Assessment of Food Cultures](#).



FERMENTATION

DEFINITION

Fermentation is ‘a process in which micro-organisms such as bacteria, fungi, yeasts and micro-algae are used to preserve and/or transform raw materials into, e.g., food, feed, chemicals, pharmaceuticals, fuel, biomass.’^[4]

SPONTANEOUS V. CONTROLLED FERMENTATION

In unpasteurised foods (i.e., not sterile), spontaneous fermentation will **always occur**, visibly and non-visibly, even when the food is stored in the fridge. Whether the natural flora protects the food against spoilage organisms and pathogens depends largely on **chance**.

By using food cultures, food manufacturers can **standardise the fermentation process** and gain control over the safety and quality of their products.

The 2025 FAO/WHO Risk Assessment of *Listeria Monocytogenes* in Foods indicates that^[5]:

- The addition of lactic acid bacteria (LAB) is considered a well-recognised strategy to limit *L. monocytogenes* development, with minimal interference with the sensory quality of the product.
- LAB addition is found to be the **most effective intervention strategy for reducing risk per serving**, especially against high environmental contamination.

CASE STUDY: FERMENTATION HELPS DELAY THE GROWTH OF PATHOGENS

According to EFSA’s 2017 Listeria opinion,^[6] even foods not typically regarded as “fermented” undergo a form of spontaneous fermentation due to indigenous microbial flora. Such spontaneous fermentation provides **natural protection against pathogens** before spoilage occurs.

A Norwegian study found that indigenous lactic acid bacteria sometimes acted as a bioprotective culture in cooked meat products that were sliced and either vacuum- or gas-packed.^[7] This effect can reliably be reached by the use of selected food cultures.

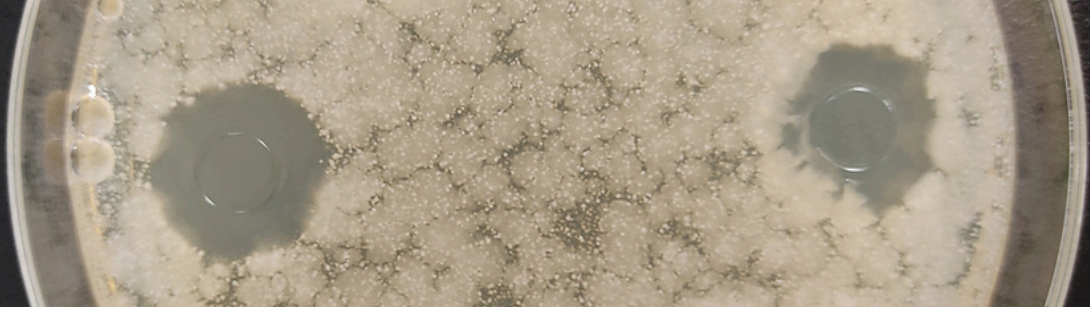
[4. Joint industry definitions of fermentation and precision fermentation - May 2025.](#)

[5. FAO & WHO. 2024. Risk assessment of *Listeria monocytogenes* in foods: Part 2: Risk assessment – Meeting report. Microbiological Risk Assessment Series, No. 47. Rome.](#)

[6. EFSA BIOHAZ Panel \(2018\). Scientific Opinion on *Listeria monocytogenes* contamination of ready-to-eat foods and the risk for human health in the EU. EFSA Journal 2018;16\(1\):5134](#)

[7. Bredholt, S., Nesbakken, T., & Holck, A. \(1999\). Protective cultures inhibit growth of *Listeria monocytogenes* and *Escherichia coli* O157:H7 in cooked, sliced, vacuum- and gas-packaged meat. International Journal of Food Microbiology, 53\(1\), 43–52](#)

[8. Lardeux, A. L., Hartmann, A., & Latour, M. A. \(2015\). Inhibition of *Listeria monocytogenes* by lactic acid bacteria: The Jameson effect explained. Food Microbiology, 49, 218–225](#)



FOOD CULTURES: MODE OF ACTION

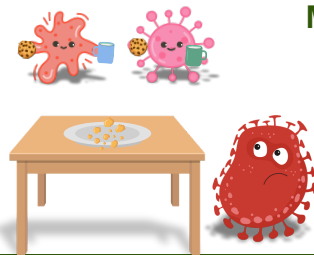
All food cultures act through these main mechanisms:

MODE 1 – OCCUPYING PHYSICAL SPACE

Mechanism: Beneficial cultures colonise the surface or interior of the food, physically blocking potential spoilage or pathogenic microorganisms from establishing themselves.



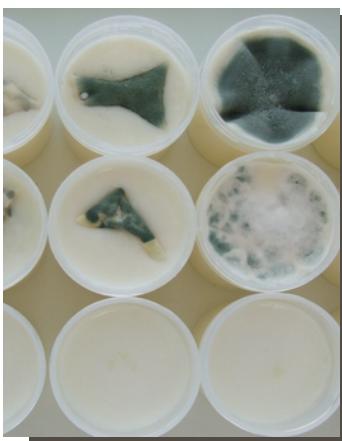
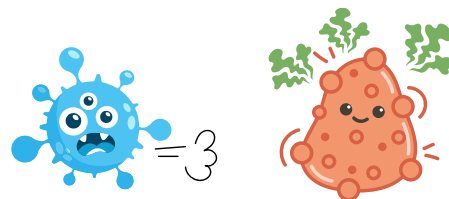
MODE 2 – COMPETING FOR NUTRIENTS



Mechanism: Food cultures rapidly consume key nutrients in the food matrix, limiting the resources available for harmful microorganisms and slowing or preventing their growth.

MODE 3 – PRODUCING ANTIMICROBIAL COMPOUNDS

Mechanism: Most food cultures produce naturally occurring compounds, such as organic acids, enzymes, and other substances, including bacteriocins, which inhibit or inactivate undesirable microorganisms.



The picture shows fermented milk produced with food cultures that have a stronger bioprotective effect (bottom row) and those with a weaker bioprotective effect (top row). Some food cultures are more effective than others at delaying the growth of yeast and mould spoilage.



THE LEGAL STATUS OF FOOD CULTURES

Being food ingredients, food cultures:

- Fall within the scope of the General Food Law^[9]; and
- Must be declared in the list of ingredients, in accordance with the Food Information to Consumers Regulation^[10]

An indication of their legal status can be found in Art. 3.2(ii) of the Novel Food Regulation (Reg. 2015/2283), which classifies 'novel food' as any **food** consisting of, isolated from or produced from microorganisms, fungi or algae. In addition, the inclusion of microbial strains in the Novel Food Catalogue confirms their qualification as foods under EU food law.

In the meeting of the Standing Committee on the Food Chain and Animal Health of 14 December 2006, draft criteria on the regulatory classification of microbial cultures used in foodstuffs were discussed. **These criteria were not endorsed.**

In 2023, the Dutch government proposed a revised version of the draft criteria with the aim of obtaining their endorsement by the Standing Committee on Plants, Animals, Food and Feed. According to the proposal, cultures added for a specific technological effect (e.g., preservation, colouring), analogous to an additive, are to be considered food additives. Again, after twenty years, the Member States have not reached a consensus on these criteria. **EFFCA does not support this proposal.**



9. Food Law Regulation (EC) No 178/2002;

10. Food Information to Consumers Regulation (EU) No 1169/2011.



IMPACT OF A FOOD ADDITIVE STATUS

Applying Regulation (EC) No 1333/2008 to microbial food cultures would have far-reaching consequences:

1. There is no justification for reclassifying food cultures as additives

There is no justification for reclassifying food cultures as additives, as they are normally consumed as food, are characteristic ingredients of fermented products and have a long history of safe use. They are already transparently labelled as ingredients under EU law. Their technological effects are intrinsic to the fermentation process and inseparable from their role as food components, which places them outside the rationale of the food additive framework. Creating a new additive regime for certain uses of food cultures would therefore establish a complex, costly and unenforceable regulatory system with no clear benefit.

2. The approach would be impossible to enforce

Once microorganisms are present in food, it is not possible to distinguish native flora from cultures added intentionally.

Fermentation always produces both organoleptic and preserving effects, so authorities would have no workable way to determine the “primary function” of cultures in different food matrices.

This would lead to inconsistent national interpretations and make enforcement unmanageable, especially for traditional foods relying on complex or undefined microbial communities.

3. It would hinder innovation

Additive authorisation would require EFSA evaluations for **every strain and every use**, creating hundreds of dossiers. No approvals would be expected before the mid-2030s without a benefit or increase to public safety or transparency. The added burdens could challenge SMEs, slow down research and development, and jeopardise traditional fermented foods, including those made with house flora and undefined cultures.



IMPACT OF A FOOD ADDITIVE STATUS

4. It would contradict EU policies on food waste

Fermentation is one of the most effective tools to extend shelf life naturally and supports the EU's target to reduce food waste by 30 per cent by 2030. If certain fermentation uses were reclassified as additives, some cultures could no longer be used in foods where additives are prohibited, such as yoghurt and organic foods, leading to shorter shelf life and increased waste.

The Fit for Future Platform^[11] has already warned that regulating fermentation under the additives framework would risk creating barriers to green innovation. In its 2022 final opinion on biosolutions, the Commission's high-level expert group recommended reducing unnecessary regulatory burdens in the sector. The opinion was developed with the support of all EU Member States, alongside expert representatives from the European Committee of the Regions and the European Economic and Social Committee.

Suggestion 9 ('Develop industry guideline for food cultures as food ingredients') reads:

Description: The use of food cultures as ingredients in foods that are not traditionally known as fermented should not be regulated under Regulation (EC) 1333/2008 on food additives, because it would be disproportionate to require pre-market approval of food cultures that have been used for fermentation for a very long time inside the EU. Instead, a harmonised approach could be achieved by the Commission of developing and promoting the development of an industry guideline for the safe use and production of food cultures, as well as labelling requirements to ensure transparency and clear consumer information.

Expected benefits: Reduction of administrative burdens on the industry and a harmonised approach for the benefit of both industry, consumers and the environment.

5. It would mislead consumers

Food cultures are recognised as ingredients under EU law. Reclassifying them as additives would make labels less transparent by replacing simple ingredient names with technical strain identifiers, which is in contrast with the FIC Regulation's clarity requirements. It would also confuse consumers by equating natural fermentation with chemical additives, undermining trust in traditional and minimally processed foods.

11. [FIT FOR FUTURE Platform Opinion, BioSolutions – Adopted opinion \(2022\), 2022/SBGR3/08.](#)



PRAGMATIC REGULATORY APPROACH FOR THE USE OF FOOD CULTURES

1. LABELLING SOLUTION

The food culture industry, represented by EFFCA, seeks a regulatory framework ensuring legal clarity, proportionality, consumer transparency, and safety, especially for applications that do not visibly alter the product, such as in salads, ready-to-eat foods and certain fish and meat applications. This would also unlock the potential of fermentation to support the transition to more sustainable food systems, reducing food waste and environmental impact.

Our key recommendations:

- 1 Harmonise the labelling in the EU by using the term ‘protected by fermentation’:** Building on the success of certain Member States such as Germany and France, where bioprotective cultures are labelled as ‘Schutzkulturen’ and ‘ferments’, respectively.
- 2 Regulatory Pathway:** Implement the labelling term via an amendment to Regulation (EU) No 1169/2011 (Annex III or VI) through a delegated act or a Commission position statement.
- 3 Maintain classification as food ingredients:** Maintain regulation under the General Food Law without requiring pre-market approval.

2. SELF-REGULATORY INDUSTRY GUIDELINE

EFFCA developed a [self-regulatory guideline](#) for determining food cultures’ quality and safety in use. The scope and objective of the guidance are to document best practices of the global food culture industry on:

- Safety assessment of food cultures in the intended application, according to EFSA’s guidelines.
- Quality parameters for food cultures preparations, including viable cell counts and/or activity and purity.
- Good labelling practices in Business-to-Business (B2B) and Business-to-Consumer (B2C) commerce of food cultures preparations and fermented foods.
- Documentation to inform authorities in inspections or audits of food cultures manufacturers/suppliers.

This guideline is in line with the main principle in the General Food Law Regulation (178/2002) that the responsibility for ensuring food safety lies with the Food Business Operator, unless it cannot be duly managed at that level.



KEY TAKEAWAYS

1

Food cultures are safe live microorganisms used as food ingredients to drive fermentation and improve taste, texture, safety and shelf life of foods.

2

Fermentation occurs spontaneously in unpasteurised foods. Controlled fermentation with industrially produced food cultures ensures consistent and safe outcomes.

3

Food cultures are widely recognised for inhibiting spoilage organisms and pathogens such as *Listeria*.

4

Based on EU legislation, food cultures are food ingredients and fall under the General Food Law.

5

Classifying food cultures as food additives could mislead consumers, increase food waste, hinder innovation, and place a disproportionate burden on EFSA, the Commission, and Food Business Operators.

6

EFFCA seeks a pragmatic regulatory approach that maintains food cultures as food ingredients under existing food law while ensuring safety and transparency:

- Labelling solution introducing the term ‘protected by fermentation’, aligning with practices in Germany and France.
- Self-regulatory guidelines ensuring the safety and quality of the use of food cultures.

**PROTECT FOOD SAFETY,
SUSTAINABILITY AND INNOVATION:
ENSURE FOOD CULTURES REMAIN
RECOGNISED AND REGULATED AS
FOOD INGREDIENTS**

ABOUT EFFCA

The European Food & Fermentation Cultures Association - EFFCA - was formed in 1992. EFFCA is a central source of information for regulatory authorities, journalists, NGOs, other food/feed sector associations, scientists and academic audiences.



EFFCA's objective is to enhance public knowledge of the contribution the use of microbial cultures make within the food chain through accurate, fair and scientifically-based information, while discouraging any inappropriate promotion or misuse.



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