

The Organism Is Not the Ingredient

Why 2026 Is Forcing Food Biotechnology to Separate Production Strain, Microbial Biomass and Purified Product

José M. López, Research Director

ABSTRACT

Food biotechnology is often discussed as though the microorganism used in fermentation were the ingredient placed on the market. In many processes, it is not. A production strain may be genetically modified while the commercial material is a purified enzyme, protein, oligosaccharide, vitamin or other metabolite; in biomass fermentation, by contrast, the microbial biomass itself may constitute the food. During 2026, this distinction has become unusually visible. The United Kingdom published dedicated precision-fermentation safety and market-authorisation guidance; the European Union authorised *Rhizomucor pusillus* mycelium as a novel food; and EFSA food-enzyme opinions continued to distinguish strain identity, antimicrobial-resistance determinants, viable cells, recombinant DNA, manufacturing residues and final-product exposure. This article argues that the scientifically useful regulatory unit is not 'the microorganism' alone but a production-organism-to-product evidence chain. It proposes a Product–Organism Separation Matrix (POSM) for development, supplier qualification and regulatory strategy, while identifying where organism-level hazards remain decisive even when the organism is absent from the final ingredient.

KEYWORDS: *precision fermentation; production microorganism; microbial biomass; food enzymes; recombinant DNA; antimicrobial*

1 | The regulatory signal of 2026

A useful change is occurring in the language of food biotechnology regulation. Authorities are increasingly forcing applicants to state what, exactly, reaches the consumer. That sounds elementary, yet the answer determines the relevant hazard model. A microorganism can be the production machinery, the food itself, a residual process impurity, or a source from which a purified molecule is recovered. Those are not interchangeable regulatory situations.

The United Kingdom made this distinction particularly visible in 2026. In February, the Food Standards Agency (FSA), with Food Standards Scotland, published the UK's first safety guidance for precision-fermentation products. It describes precision fermentation as the controlled use of selected or modified microorganisms to produce defined target molecules and assumes, for the core purified-product model, that the desired material is separated from the broth and that live production organisms do not remain in the final food. In March, the UK Government published market-authorisation guidance explaining that classification can change where recombinant DNA or viable microorganisms remain in the final product. [1,2]

The European Union simultaneously supplied a different but complementary example. Commission Implementing Regulation (EU) 2026/1507 authorised *Rhizomucor pusillus* mycelium as a novel food. Here the microbial biomass is not merely production equipment to be discarded: after fermentation, the biomass is harvested, pasteurised to inactivate viable fungal cells, dried and milled, and the resulting material is the authorised food. [3]

These developments expose the central proposition of this article: organism identity matters, but product identity determines how organism-level evidence must be translated into a food-safety and compliance dossier.

2 | Four materially different fermentation outcomes

The phrase 'fermentation-derived ingredient' can conceal at least four technically different outcomes. First, viable-culture foods deliberately contain living microorganisms. Second, biomass-fermentation foods use whole or substantially whole

microbial biomass, although the cells may be inactivated. Third, precision-fermentation products are target molecules recovered from a production broth and purified away from the production organism. Fourth, food enzymes and processing aids may be produced by microorganisms but used under conditions in which the enzyme preparation, the enzyme activity, or both may be removed and/or inactivated during downstream food manufacture.

The distinction is not semantic. It changes the relevant specifications, exposure model, microbiological controls, molecular tests, labelling questions and authorisation pathway. A dossier that proves the safety of a strain cannot automatically prove the safety of every product made by that strain. Conversely, the absence of viable cells in a purified product does not make the characteristics of the production strain irrelevant.

3 | QPS is a starting architecture, not a product certificate

EFSA's Qualified Presumption of Safety (QPS) approach illustrates the layered nature of microbial safety. QPS pre-assesses taxonomic units using identity, body of knowledge and known safety concerns. Where appropriate, qualifications identify issues that must still be checked at strain level. EFSA's July 2026 QPS update reported that no new information required changes to previously recommended taxonomic units during the review period. [4,5]

QPS therefore reduces unnecessary repetition; it does not erase strain-specific questions. A species may be eligible for QPS while a particular production strain still requires confirmation concerning acquired antimicrobial-resistance genes, toxigenic potential or the consequences of genetic modification. Nor does QPS establish the composition, purity, stability or intended-use safety of the commercial ingredient. The regulatory shortcut is conditional, not ontological: it concerns what can reasonably be presumed about a taxonomic unit, not everything that can emerge from an industrial fermenter.

4 | The 2026 glutaminase case: when the strain remains relevant after the cells are gone

An EFSA opinion published in May 2026 on glutaminase produced by genetically modified *Bacillus subtilis* strain Glu3-3 is a useful stress test. *B. subtilis* is a species for which QPS may be applicable subject to qualifications, but the production strain contained multiple copies of acquired antimicrobial-resistance genes. EFSA considered the food enzyme free from viable cells of the production strain, yet the absence of production-strain DNA was not demonstrated. [6]

This is precisely the kind of case that defeats simplistic statements such as 'the microorganism is removed, therefore the microorganism does not matter'. Viability, DNA and gene content are different endpoints. A negative viable-cell test addresses propagation of the production organism; it does not by itself establish absence of recombinant DNA. Where antimicrobial-resistance determinants are present, residual DNA can acquire a different safety significance from residual DNA originating from a strain without such determinants.

The practical lesson is that downstream purification cannot be described merely as a generic 'removal step'. The dossier must identify what the process is expected to remove, what analytical endpoint verifies that removal, and why the residual level -if any- is acceptable for the intended product.

5 | The counterexample: when both viable cells and recombinant DNA are absent

Other 2026 EFSA opinions show the opposite pattern. For β -glucosidase produced with genetically modified *Trichoderma reesei* strain DP-Nyk114, EFSA reported that the enzyme preparation was free from viable production-organism cells and recombinant DNA. Similar endpoint-specific evidence appears across contemporary food-enzyme assessments. [7]

The significance is methodological. 'Produced with a genetically modified microorganism' and 'contains a genetically modified microorganism' are not equivalent statements. Neither are 'contains no viable cells' and 'contains no recombinant DNA'. Regulatory and commercial documentation should preserve these distinctions rather than collapse them into a binary GMO/non-GMO slogan.

6 | Biomass changes the object of safety assessment

The *Rhizomucor pusillus* authorisation demonstrates the other end of the spectrum. The authorised novel food is the fungal mycelial biomass itself. The Union specification therefore characterises macronutrient composition, microbiological criteria, heavy metals and a broad mycotoxin panel. The process includes pasteurisation to inactivate viable fungal cells, but inactivation does not transform the product into a purified metabolite. The cell material remains the food matrix. [3]

This distinction has consequences for nutrition, digestibility, allergenicity, cell-wall components, secondary metabolites and batch consistency. A purified molecule may be characterised principally through chemical identity and impurity profiles; a biomass ingredient carries a more complex compositional fingerprint. The production organism and the ingredient are physically much closer, but even here they are not conceptually identical: the marketed material is processed biomass with a defined specification, not an uncontrolled culture.

7 | Purity is a process claim supported by analytical evidence

In fermentation businesses, the word 'purified' can become dangerously rhetorical. Industrial purification is a sequence of separations with finite selectivity: biomass removal, filtration, ultrafiltration, precipitation, chromatography, crystallisation, washing, drying and other operations depending on the product. Each step changes the distribution of cells, DNA, proteins, metabolites, media components, processing aids and adventitious contaminants.

A defensible purity claim therefore requires a mass-balance and analytical concept. The relevant question is not whether the process contains a filtration step, but whether the process reproducibly controls the hazards and impurities that matter for the product specification. EFSA food-enzyme opinions routinely describe production and downstream processing in this manner, connecting process information to compositional and microbiological evidence. [7,8]

8 | Residual DNA: presence, identity and significance are separate questions

Residual DNA is often discussed as if detection itself were a hazard conclusion. It is not. Three questions should be separated: is DNA detectable; what DNA is it; and does its sequence, amount, physical state and exposure create a relevant safety concern? The answer can be especially important when the production strain contains acquired antimicrobial-resistance genes or other sequences of concern.

Analytical design matters. A PCR result is method- and target-dependent. A statement of 'not detected' is incomplete without the target, sampling plan, matrix, extraction performance and limit of detection. For supplier qualification, the most useful certificate is therefore not a generic 'DNA-free' declaration, but a controlled specification linked to a validated or fit-for-purpose method and to the relevant production-strain sequence.

9 | Viability is not the same as biological activity

The absence of culturable cells addresses one dimension of biological persistence. It does not necessarily prove the absence of all cell structures, DNA, enzymes, toxins or metabolites. Conversely, the presence of inactivated biomass does not imply the risks associated with a proliferating culture. Food biotechnology needs vocabulary that distinguishes viability, metabolic activity, structural biomass and molecular residues.

This is particularly important for thermal inactivation. Pasteurisation can be an effective control for viable cells while leaving proteins, nucleic acids and heat-stable metabolites present. The Rhizomucor authorisation makes the point concretely: inactivation is part of the defined manufacturing process, while the resulting biomass remains compositionally substantive and is regulated through product specifications. [3]

10 | Antimicrobial resistance belongs to the organism-to-product bridge

Antimicrobial resistance (AMR) is one of the clearest reasons why organism-level characterisation cannot be abandoned after downstream purification. The safety relevance depends on whether resistance is intrinsic or acquired, the genetic context, transferability, the presence of viable cells and the persistence of relevant DNA in the final preparation. EFSA's QPS framework explicitly uses AMR-related qualifications, and individual enzyme assessments can turn on the characteristics of the specific strain. [4,6]

The appropriate industrial response is not to treat every AMR annotation as equivalent. It is to map the production strain's resistome, distinguish intrinsic from acquired determinants, understand how genetic engineering has altered the strain, and define product-level controls proportionate to the final exposure. This approach is both more scientifically rigorous and less alarmist than a generic 'AMR-free' marketing claim.

11 | The allergenicity question crosses the organism/product boundary

A target protein made by precision fermentation may be chemically or sequence-identical to a protein already present in conventional food, but allergenicity cannot be inferred from the production platform alone. The protein sequence, post-

translational state, purity, aggregation, processing history, intended use and exposure all matter. If the target reproduces a known allergen, removal of the production organism does not remove the allergenic identity of the target molecule.

The inverse is also important. The use of a microbial production host does not automatically mean that host proteins occur at meaningful concentrations in a highly purified product. Host-cell proteins are an impurity question to be measured and controlled where relevant. This again demonstrates why 'organism safety' and 'ingredient safety' overlap without being synonymous.

12 | Great Britain: 2026 guidance makes classification operational

The FSA/FSS safety guidance published in February 2026 addresses classification and HACCP principles for precision-fermentation products and signals further guidance development. A complementary supplementary document for precision- and biomass-fermentation novel foods highlights recurring dossier difficulties in identity, characterisation, manufacturing, stability, conditions of use and allergenicity. [1,9]

The March 2026 market-authorisation guidance is commercially significant because it describes how precision-fermentation products can intersect with novel-food and GM-food frameworks. Where a final food contains recombinant DNA or viable microorganisms, the classification can differ from that of a purified product in which these are absent. [2]

This is not merely a UK administrative detail. It is an example of a broader regulatory principle: downstream process performance can affect legal characterisation. The manufacturing process is therefore part of regulatory identity, not just factory know-how.

13 | European Union and Spain: no single 'precision fermentation regulation'

The European Union does not regulate every fermentation-derived food under one dedicated precision-fermentation statute. The applicable pathway depends on the product, history of consumption, production organism, intended use and other characteristics. Novel foods may fall under Regulation (EU) 2015/2283; genetically modified food and feed may engage Regulation (EC) No 1829/2003; food enzymes are governed by their own sectoral framework alongside general food law and hygiene requirements. Spain applies the directly applicable EU regulations and participates in the Union enforcement architecture.

This fragmented architecture is sometimes presented as a regulatory weakness. It can also be understood as product-sensitive regulation: the law asks what the food is and how it is made before selecting the dossier. The weakness appears when developers use platform language - 'precision fermented', 'animal-free', 'bio-identical' - as though it answered those legal questions. It does not.

14 | United States: ingredient status and manufacturing safety remain distinct

In the United States, fermentation-derived ingredients may enter different regulatory routes depending on intended use and legal status, including food-additive or GRAS pathways. FDA's 2026 Human Foods Program priorities include a proposed reform intended to require submission of GRAS notices for new substances claimed to be GRAS, illustrating the broader policy pressure for greater transparency in ingredient oversight. [10]

For biotechnology developers, the practical point is that a conclusion about the production microorganism does not substitute for a conclusion about the substance added to food under its intended conditions of use. Identity, manufacturing controls, specifications, dietary exposure and toxicological or other safety evidence remain product-centred questions.

15 | Supplier qualification must stop at neither the strain certificate nor the COA

A conventional certificate of analysis is typically batch-facing: assay, moisture, microbiology, heavy metals and selected impurities. A strain dossier is platform-facing: taxonomy, genotype, engineering history, AMR, toxigenicity and stability. Modern fermentation ingredients require a controlled bridge between the two.

Procurement and quality teams should therefore request a layered evidence package. At minimum, it should identify the production organism at strain level where relevant; state whether it is genetically modified; define whether viable cells are expected or permitted in the final material; define the policy and method for residual production-organism DNA; identify

critical organism-derived metabolites or host-cell impurities; document the downstream removal/inactivation strategy; and connect these controls to the released product specification.

This does not mean that every customer should receive proprietary strain-construction details. Confidentiality can be protected through appropriately scoped declarations, third-party verification, regulatory dossiers and controlled disclosure. The goal is traceability of the safety conclusion, not forced publication of industrial know-how.

16 | The certificate-of-analysis paradox

A batch may comply perfectly with its certificate of analysis and still be inadequately characterised if the specification asks the wrong questions. This is the certificate-of-analysis paradox: analytical conformity is only as strong as the specification behind it.

For a fermentation-derived ingredient, a specification limited to assay, water and total plate count may omit the decisive issue—residual DNA, a host-derived metabolite, an AMR-linked sequence, a process impurity or a relevant allergen. Conversely, imposing indiscriminate tests for every conceivable microbial residue can create cost without risk reduction. Specification design should be hazard-driven and linked to the actual organism–process–product chain.

17 | Traceability should follow transformations, not names

The same commercial name can hide changes in production strain, fermentation medium, genetic construct, downstream process or manufacturing site. Some changes may be irrelevant to safety; others may alter impurity profiles or regulatory status. A robust change-control system therefore needs transformation-aware traceability.

The critical record is not simply 'lot X of ingredient Y'. It is the versioned relationship between strain version, seed lot, fermentation campaign, downstream process version, released batch, analytical methods and market authorisation or legal assessment. This is especially important where a supplier improves productivity through strain engineering after an ingredient has already been qualified by customers.

18 | Digitalisation opportunity: a regulatory digital twin for fermentation ingredients

A useful digital architecture would represent the production organism, process and product as linked but separable entities. The strain node would hold taxonomy, genomic version, engineering events and safety qualifications. The process node would hold fermentation and downstream-control versions. The product node would hold composition, impurity specifications, intended uses, exposure and jurisdiction-specific legal status.

Such a model could support automated change-impact assessment: if the strain changes, which product specifications require revalidation? If a purification step changes, which residual-DNA or host-cell-protein assumptions are affected? If a new market is added, which organism-level evidence must be exposed to the regulator? This is an informatics opportunity, not a claim that blockchain or AI inherently solves traceability.

19 | Research & Innovation Opportunity

UNRESOLVED PROBLEM. Fermentation dossiers often separate strain safety, process validation and finished-product specifications into different organisational systems. This can obscure whether a change in one layer invalidates assumptions in another.

WHY IT MATTERS. A productivity-improving strain modification, a membrane change or a new fermentation medium can alter residual DNA, host-cell proteins, metabolites or impurities without changing the commercial ingredient name.

WHAT IS ALREADY KNOWN. QPS qualifications, strain-level AMR assessment, viable-cell testing, residual-DNA testing, compositional specifications and exposure assessment are established regulatory tools. Their use is visible across EFSA opinions and 2026 UK guidance. [1,4–9]

WHAT REMAINS UNKNOWN. There is not generally validated cross-product framework demonstrating which organism-level changes predict meaningful changes in final-product risk across purified molecules, enzymes and microbial biomass.

PROPOSED HYPOTHESIS. A Product–Organism Separation Matrix (POSM) linking strain attributes to process barriers and released-product specifications can improve change control and reduce both under-testing and irrelevant testing.

DEVELOPMENT PATHWAY. Define four evidence layers: organism, fermentation process, downstream process and final product. For each potential hazard, record its origin, expected fate, control step, verification method, acceptance criterion and jurisdictional relevance. Apply the model retrospectively to authorised products and prospectively to pilot-scale products.

KEY VALIDATION STEPS. Use blinded dossier reviews; compare POSM predictions with measured residual DNA, viable cells, host-cell proteins and selected metabolites; test sensitivity to deliberate process changes; quantify false alarms and missed hazards; and evaluate regulatory query rates.

REGULATORY CONSTRAINTS. POSM would be a decision-support architecture, not an authorisation pathway. It cannot replace EFSA/FSA/FDA assessment, QPS qualifications, novel-food authorisation, GM-food requirements or product-specific legal advice.

POTENTIAL INDUSTRIAL RELEVANCE. The framework could support supplier qualification, technology transfer, contract manufacturing, regulatory submissions and customer declarations while preserving confidential know-how through tiered disclosure.

20 | A falsifiable validation programme

A useful POSM programme should be capable of demonstrating that its added complexity is unnecessary. A prospective study could select multiple fermentation-derived products representing purified enzymes, purified proteins or metabolites, and inactivated biomass. For each, conventional supplier qualification could be compared with POSM-based qualification.

Primary endpoints could include the number of material hazards identified before scale-up, time to close regulatory information requests, number of suppliers change events requiring requalification, and concordance between predicted and observed impurity changes. Secondary endpoints could include analytical cost, dossier preparation time and false-positive escalation. If POSM adds documentation without improving decisions, it should be simplified or rejected.

21 | Implications for ingredient, food and biotechnology businesses

For ingredient suppliers, the strategic opportunity is to sell evidence quality alongside material quality. Customers increasingly need to know not merely that a product meets specification, but why the specification controls the hazards created by the production platform. This is particularly important for innovative proteins, enzymes, vitamins, oligosaccharides, flavours and other high-value fermentation products.

For food manufacturers, the implication is that vendor approval should distinguish organism-level and product-level evidence. A familiar species name, a QPS association or a statement that the organism is absent cannot substitute for the finished-ingredient dossier. Equally, a novel microbial platform should not be rejected merely because it sounds unfamiliar when the product is well characterised and the organism-derived hazards are appropriately controlled.

For INTABIOTECH-relevant domains, the opportunity lies in rigorous specification architecture, analytical strategy, cross-jurisdictional dossier design and supplier qualification for fermentation-derived functional ingredients. This does not require disclosure of proprietary strain engineering or manufacturing parameters. It requires defensible boundaries between what is known about the organism, what the process controls and what the customer actually receives.

22 | Evidence status and limits

ESTABLISHED EVIDENCE. EFSA uses QPS as a qualified pre-assessment framework for microorganisms; contemporary food-enzyme opinions separately assess production-strain characteristics, viable cells, DNA and product exposure. The UK published dedicated precision-fermentation guidance in 2026. The EU authorised inactivated *Rhizomucor pusillus* mycelial biomass as a novel food in July 2026. [1–7]

EMERGING EVIDENCE AND REGULATORY PRACTICE. Authorities are making the organism/process/product distinction more explicit, particularly for precision and biomass fermentation. The practical convergence of dossier structures across jurisdictions remains incomplete. [1,2,9]

EXPERT INTERPRETATION. The most useful unit for industrial risk management is an organism-to-product evidence chain rather than either a strain dossier or a finished-product COA in isolation.

HYPOTHESIS. A structured Product–Organism Separation Matrix may reduce regulatory rework and improve change control by making hidden assumptions about organism removal, DNA, impurities and exposure explicit. This has not been validated as a regulatory standard.

23 | Conclusions: regulate the relationship, not the label

The organism is not always the ingredient. Sometimes it is the factory. Sometimes its biomass is the food. Sometimes its DNA, proteins or metabolites remain as analytically relevant residues. Sometimes the target molecule itself carries the principal biological property of concern. Food biotechnology becomes safer and easier to regulate when these situations are separated rather than compressed into labels such as 'fermented', 'GMO', 'microbial' or 'precision fermented'.

The 2026 evidence is unusually coherent on this point. UK guidance distinguishes purified precision-fermentation products from final foods containing viable microorganisms or recombinant DNA. EFSA continues to interrogate strain-level AMR, viable cells and DNA independently. The EU's Rhizomucor authorisation demonstrates that inactivated microbial biomass can itself be the regulated food, with a correspondingly rich compositional specification. [1–7]

The durable principle is therefore simple: characterise the organism, validate the process, specify the product, and preserve the evidence linking all three.

| Related Knowledge Areas

- Biotechnology – production strains, precision fermentation and biomass fermentation.
- Food Safety – AMR, residual DNA, viable cells, microbial metabolites and impurity control.
- Functional Ingredients – proteins, enzymes, oligosaccharides, vitamins and fermentation-derived actives.
- Processing Technologies – fermentation, cell removal, ultrafiltration, purification and inactivation.
- Regulatory Affairs – EU/Spain, Great Britain and United States market pathways.
- AI & Food – digital change-impact assessment and evidence traceability.
- Emerging Research – organism-to-product predictive safety models.

| Editorial Scope & Evidence Note

This is an original scientific, regulatory and industrial analysis prepared from sources available by 19 October 2026. It distinguishes established evidence, emerging regulatory practice, expert interpretation and proposed research. It is not an EFSA, FSA, FDA or European Commission opinion; it is not a legal opinion on a specific product; and the proposed Product–Organism Separation Matrix is an editorial R&D concept rather than an existing standard or authorisation mechanism.

| References and Primary Sources

- [1] UK Food Standards Agency and Food Standards Scotland. UK safety guidance on precision fermentation products. Published 18 February 2026. <https://www.gov.uk/government/publications/precision-fermentation/uk-safety-guidance-on-precision-fermentation-products>
- [2] UK Government / Food Standards Agency. Precision fermentation market authorisation in Great Britain. Published 12 March 2026. <https://www.gov.uk/government/publications/precision-fermentation-market-authorisation-in-great-britain/precision-fermentation-market-authorisation-in-great-britain>
- [3] European Commission. Commission Implementing Regulation (EU) 2026/1507 of 3 July 2026 authorising Rhizomucor pusillus mycelium as a novel food. OJ L, 6 July 2026. https://eur-lex.europa.eu/eli/reg_impl/2026/1507/oj
- [4] European Food Safety Authority (EFSA). Qualified presumption of safety (QPS). Reviewed 25 March 2026. <https://www.efsa.europa.eu/en/topics/topic/qualified-presumption-safety-qps>
- [5] EFSA BIOHAZ Panel. Update of the list of QPS recommended microbiological agents intentionally added to food or feed as notified to EFSA 24: suitability of taxonomic units notified until March 2026. EFSA Journal. 2026;24:e10155. DOI: 10.2903/j.efsa.2026.10155.
- [6] EFSA Panel on Food Enzymes. Safety evaluation of the food enzyme glutaminase from the genetically modified Bacillus subtilis strain Glu3-3. EFSA Journal. 2026;24:e10088. DOI: 10.2903/j.efsa.2026.10088.
- [7] EFSA Panel on Food Enzymes. Safety evaluation of the food enzyme β -glucosidase from the genetically modified Trichoderma reesei strain DP-Nyk114. EFSA Journal. 2026;24:e10129. DOI: 10.2903/j.efsa.2026.10129.
- [8] EFSA Panel on Food Enzymes. Safety evaluation of the food enzyme triacylglycerol lipase from the genetically modified Trichoderma reesei strain DP-Nzk118. EFSA Journal. 2026. DOI: 10.2903/j.efsa.2026.10175.
- [9] Food Standards Agency. Supplementary Guidance for Novel Foods Produced by Precision or Biomass Fermentation. FSA Research and Evidence. 2026. DOI: 10.46756/001c.158776.
- [10] U.S. Food and Drug Administration. Human Foods Program 2026 Priority Deliverables. 23 January 2026. <https://www.fda.gov/about-fda/human-foods-program/human-foods-program-2026-priority-deliverables>
- [11] European Parliament and Council. Regulation (EU) 2015/2283 on novel foods. <https://eur-lex.europa.eu/eli/reg/2015/2283/oj>

[12] European Parliament and Council. Regulation (EC) No 1829/2003 on genetically modified food and feed. <https://eur-lex.europa.eu/eli/reg/2003/1829/oj>

[13] European Parliament and Council. Regulation (EC) No 178/2002 laying down the general principles and requirements of food law. <https://eur-lex.europa.eu/eli/reg/2002/178/oj>

[14] European Parliament and Council. Regulation (EC) No 853/2004 on the hygiene of foodstuffs. <https://eur-lex.europa.eu/eli/reg/2004/852/oj>

[15] Current Food Science and Technology Reports. Precision Fermentation for Food Applications: Advances in Microbial Engineering and Regulatory Frameworks. 2026. DOI: 10.1007/s43555-026-00098-8.

© 2026 José M. López · All rights reserved.