

Specialty Food Ingredients and processed & “ultra-processed” foods: Debunking the myths with facts

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BACKGROUND

A number of pejorative connotations can be observed when it comes to “processed foods” and “ultra-processed foods” and their formulation with specialty food ingredients.

The debate becomes even more virulent with the emergence of new plant-based food categories, which detractors blame the alleged high content in food additives to defend their traditional counter-parts.

The aim of this paper is not to dispute the respective merits of “non- or low-processed food diets” vs. “processed or ultra-processed diets”, whatever their (non-legal) definition is.

The intention is simply to recall the reasons for use and authorisation of specialty food ingredients, where such use may be considered as a “marker for ultra-processed foods” in certain foodstuffs.

GOOD TO KNOW

Food processing is used to:

- produce food **more efficiently**, i.e., more with less resources (raw materials, energy) and waste;
- make some foods **edible**;
- **increase storage stability**, i.e., **shelf life** of food (e.g., by preventing or inhibiting microbial spoilage and biochemical reactions, e.g., browning);
- **enhance palatability** of food, by e.g., improving smell, taste, appearance, and texture;
- **maintain and/or improve nutritional value** of food (e.g., by removing anti-nutrients, improving digestibility and absorption of nutrients), or by enhancing nutritional value through fortification/enrichment;
- **increase food safety** by reducing unwanted compounds (like allergens or acrylamide) from food.

Processing should not be used as a reference point to determine the healthiness of the diet. ¹

1. FoodDrinkEurope: [Scientific critique of “ultra-processed foods” classification](#)

FROM TRADITIONAL USE TO THE FUTURE OF FOOD

At all times, man has had to ensure the conservation and protection of food that was often scarce and difficult to come by. The first chemical preservative, sea salt, has been used to preserve meat and fish since earliest antiquity. In the Middle Ages, the Knights table was covered with aromatic and colourful dishes due to the use of multiple herbs and spices. At the time, no one would have qualified saffron as a food colour or apple pomace as a texturiser.

Recent knowledge development has enabled us to isolate and produce ingredients that have only been used empirically so far. When these ingredients are used for enhancement, or, in other words, for their technological function in the food, food regulators have given these the name of food additive. Food additives contribute among others to the preservation of the quality of foodstuffs, for example by limiting the outgrowth of pathogen micro-organisms, the deterioration of amino-acids or by limiting the oxidation of vitamins.

It is undisputable that diet should be varied, balanced and adapted to cover everyone's nutritional needs. Therein lies the importance of specialty food ingredients, which use contributes to readjusting nutritional intake and to providing specific health benefits: prebiotics, probiotics, fibres, plant extracts and derivatives, fats like omega-3, proteins, functional carbohydrates, vitamins and minerals.

These ingredients are used to enrich everyday consumer food products, in food supplements and in food aimed at populations with specific nutritional needs such as young children, pregnant women and elderly.

Due to the changed lifestyle, there is a demand for safe, nutritious, tasty, convenient, affordable and sustainable food and drink products. Today it is considered that moving to a more plant-based diet will not only reduce the risk of life-threatening diseases, but also the environmental impact of the food system² and thus is a sustainable way to tackling public health concerns. Specialty food ingredients continue to accompany the formulation of foods and beverages that meet such evolving policies and consumers' expectations.

2. FAO and WHO (2019) Sustainable healthy diets – guiding principles: <https://www.fao.org/3/ca6640en/ca6640en.pdf>

GOOD TO KNOW

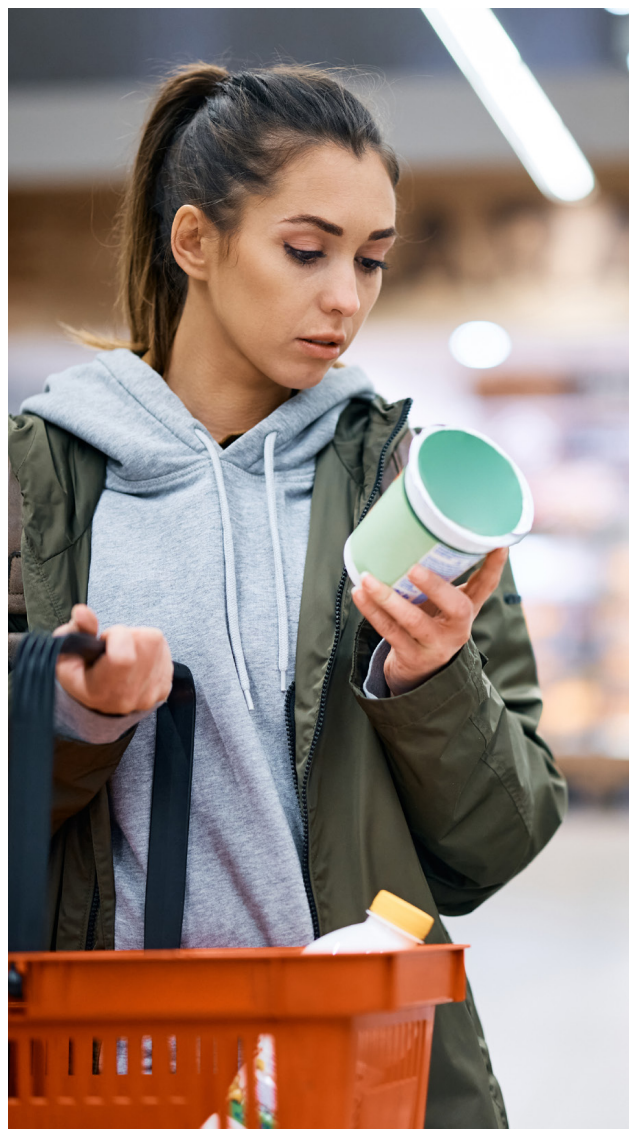
Food safety is among the most important factors affecting Europeans' food-purchasing decisions.

"Cost (54%) is most frequently selected by respondents when it comes to the most important factors when buying food. Taste (51%) comes second, followed by food safety and where the food comes from (both 46%);

These are followed by nutrient content (41%), while the impact on the environment and climate (16%) and ethics and beliefs (15%) rank lowest in importance."

Source:

[Eurobarometer survey 2022 "Food safety in the EU"](#)



THE IMPORTANCE OF SPECIALTY FOOD INGREDIENTS

Specialty Food Ingredients play a key role in the creation of safe, nutritious, tasty, convenient, affordable and sustainable food and drink products. They deliver technological, nutritional and health benefits. They are well regulated and their uses are controlled.

FOOD ADDITIVES

The key requisite for their use, beyond safety and not misleading the consumer, is that there is a reasonable technological need that cannot be achieved by other means. The safety of food additives is evaluated before they are permitted on the EU market; like in other jurisdictions, they have to comply to certain specifications (among which purity criteria) by legislation, which define the way food additives are produced, thus ensuring a certain level of standardisation and a high level of safety.

Authorisation of food additives applies to specific food and beverages categories under well-defined conditions. Lists of permitted food additives are established per defined food categories, and a number of rules apply for those foods that result from the combination of multiple ingredients.

The number of food additives used in a food recipe depend on the actual technological need, not on the degree of processing. For example, preservatives help extend shelf-life of foodstuffs and anti-oxidants are added to food to protect against deterioration caused by oxidation, such as fat rancidity and colour changes: this helps reduce food waste.

However, a long list of food additives permitted in a food category does not mean that they are used all together in a given food! On the contrary, this list represents a guarantee of diversity to use the most efficient and safe solution. The manufacturer must statutorily use the one that is best adapted to the desired technological effect, whilst taking into account the production properties and the nature of the product.

GOOD TO KNOW

“Unprocessed food” shall mean a food which has not undergone any treatment resulting in a substantial change in the original state of the food, for which purpose the following in particular are not regarded as resulting in substantial change: dividing, parting, severing, boning, mincing, skinning, paring, peeling, grinding, cutting, cleaning, trimming, deep-freezing, freezing, chilling, milling, husking, packing or unpacking.³

Example – Food additives permitted in bread prepared solely with the following ingredients: wheat flour, water, yeast or leaven, salt⁴

E 260	Acetic acid	<i>quantum satis</i>
E 261	Potassium acetate	<i>quantum satis</i>
E 262	Sodium acetates	<i>quantum satis</i>
E 263	Calcium acetate	<i>quantum satis</i>
E 270	Lactic acid	<i>quantum satis</i>
E 300	Ascorbic acid	<i>quantum satis</i>
E 301	Sodium ascorbate	<i>quantum satis</i>
E 302	Calcium ascorbate	<i>quantum satis</i>
E 304	Fatty acid esters of ascorbic acid	<i>quantum satis</i>
E 322	Lecithins	<i>quantum satis</i>
E 325	Sodium lactate	<i>quantum satis</i>
E 326	Potassium lactate	<i>quantum satis</i>
E 327	Calcium lactate	<i>quantum satis</i>
E 471	Mono- and diglycerides of fatty acids	<i>quantum satis</i>
E 472a	Acetic acid esters of mono- and diglycerides of fatty acids	<i>quantum satis</i>
E 472d	Tartaric acid esters of mono- and diglycerides of fatty acids	<i>quantum satis</i>
E 472e	Mono- and diacety tartaric acid esters of mono- diglycerides of fatty acids	<i>quantum satis</i>
E 472f	Mixed acetic and tartaric acid esters of mono- diglycerides of fatty acids	<i>quantum satis</i>

3. [Regulation \(EC\) 1333/2008 on food additives](#)

4. [Regulation \(EU\) No 1129/2011 amending Annex II to Regulation \(EC\) No 1333/2008 by establishing a Union list of food additives](#)

The overall consumption of food additives through the diet is monitored by Member States of the European Union, to ensure that their population is always below the Acceptable Daily Intake (ADI) that is defined for each food additive. For this purpose, different food consumption models are available, which takes into account the variety of diets of a given population, including for example the loyalty of consumers to certain brands. Should the monitoring show that the ADI is exceeded, the authorities would review the conditions of use of the additive and could then decide to decrease the maximum authorised quantities or to limit the use of the additive in certain foods or beverages. **In other words: whatever the food, the use of food additives is controlled. The consumer's safety is guaranteed.**

This is why for example, the statement *"[...] further research is needed to investigate the yet-unknown health impacts of the food additives [...] of such plant-based meats⁵"* is not accurate because the safety of food additives is established, re-evaluated and monitored and their uses in new types of foods that substitute the consumption of others are accounted for in the overall consumer's intake.

GOOD TO KNOW

Food Additives Intake Model & Food Enzymes Intake Model

The Food Additives Intake Model 2.1 (FAIM) is a tool for estimating chronic dietary exposure to food additives. It allows users to estimate the mean and high-level exposure to food additives for different population groups in several European countries.

It can be used by applicants, risk assessors and risk managers for estimating exposure to new food additives or to already authorised food additives for which a new use is proposed. Exposure results are provided for different population groups (e.g., infants, toddlers, adults, etc) and for different countries.

FAIM is based on data collected from Member States on food consumption (stored in the EFSA Comprehensive European Food Consumption Database), which is a source of information on food consumption across the European Union (EU).

It contains detailed data for a number of EU countries. Statistics on chronic and acute food consumption are available for: the total population ("all subjects" and "all days") or consumers only, and in grams per day (g/day) or grams per day per kilogram of body weight (g/kg bw per day).

The Food Enzymes Intake Model (FEIM) tool estimates chronic dietary exposure to food enzymes used in food processes. It also uses summary statistics on food consumption data collected from Member States. FEIM comprises process-specific calculators, such as FEIM-baking or FEIM-brewing, which allow estimation of dietary exposure to food enzymes used in individual food manufacturing processes. Exposure results are reported at mean and high level for different population groups (e.g., infants, toddlers, adults, etc.) in different countries.

5. Plant-based diets and their impact on health, sustainability and the environment: a review of their evidence: WHO European Office for the Prevention and Control of Noncommunicable Diseases. Copenhagen: WHO Regional Office for Europe; 2021; Licence: CC BY-NC-SA 3.0 IGO

FOOD ENZYMES

Like for food additives, food enzymes are used for a reasonable technological need. The Union list of authorised food enzymes will be established once the on-going safety evaluations of food enzymes by EFSA are finalised. Until then, the placing on the market and the use of food enzymes and of food produced with food enzymes are subject to the EU Member States' legislation.

VITAMINS, MINERALS AND OTHER SPECIALTY FOOD INGREDIENTS WITH NUTRITIONAL AND HEALTH BENEFITS

In order to cover everyone's nutritional needs, addition of specialty food ingredients is useful. For example, vitamins and minerals, but also fibres, fats like omega-3, functional carbohydrates can be added to food and beverages to contribute to fill the nutritional gap and improve the nutritional status of the population or sub-groups of the population.

The safety of adding such substances is thoroughly assessed. For example, the European authorities define forms of vitamins and minerals that can be used in food, including foods for vulnerable groups such as infant formula, foods for special medical purposes and baby foods⁷. They must be bioavailable, i.e., easily assimilated by the body⁸. The same regulation applies to certain other substances added to foods. Plant extracts and derivatives, where available scientific data shows that ingestion represent a potential risk to consumers, are prohibited.

Prebiotics, probiotics and any other food ingredients added for their health beneficial properties, are eligible to health claims. They may be granted after a scientific assessment of the highest possible standard by EFSA⁹. The Authority considers whether the beneficial effect of a food/constituent on a function or a risk factor for disease is substantiated by generally accepted scientific evidence, by taking into account the totality of the available scientific data and, where applicable, by weighing the evidence.

GOOD TO KNOW

Being essential for thyroid hormone production, iodine has an important role in energy-yielding metabolism and other physiological processes. Yet studies have shown that iodine intake is not always adequate across the European Union, despite national measures such as the mandatory addition of iodine in certain Member States. From a regulatory point of view, the European legislation provides the food industry with the possibility to add iodine on a voluntary basis to most foodstuffs (including for specific population groups) and food supplements. The mere addition of iodine is per se a food production process!

6. [Regulation \(EC\) No 1332/2008 of the European Parliament and of the Council of 16 December 2008 on food enzymes](#)

7. [Regulation \(EC\) 1925/2006 on the addition of vitamins and minerals and of certain other substances to foods](#)

8. At the moment, the European Commission is working on the harmonisation of the establishment of maximum levels for vitamins and minerals in foods.

9. [Regulation \(EC\) 1924/2006 on nutrition and health claims](#)

NOVEL FOOD INGREDIENTS

Novel foods are defined as foods and food ingredients, which were not consumed to a significant level within the European Union before 15 May 1997. Novel ingredients are developed to ensure the quality of foods and beverages, including the nutritional quality of foods for vulnerable groups such as infant formula and foods for special medical purposes.

Novel food ingredients are subject of a pre-market authorisation that requires a safety assessment by EFSA¹⁰. Their conditions of use are very specific and are based on an exposure and toxicological assessment to ensure that the approved uses are safe.

Example – Conditions of use of the novel food ingredient D-Ribose¹¹

Authorised novel food	Conditions under which the novel food may be used	Additional specific labelling requirements	Other requirements
Specific bars	Maximum levels	The designation of the novel food on the labelling of the foodstuffs containing it shall be 'D-ribose'. The labelling of foods containing D-ribose shall bear a statement that the foods not be used if food supplements containing D-ribose are consumed the same day.	Authorised on 16 April 2019. The inclusion is based on proprietary scientific evidence and scientific data protected in accordance with Article 26 of Regulation (EU) 2015/2283. Applicant: Bioenergy Life Science, Inc., 13840 Johnson St. NE, Minneapolis, Minnesota, 55304, USA. During the period of data protection, the novel food D-ribose is authorised for placing on the market within the Union only by Bioenergy Life Science, Inc. unless a subsequent applicant obtains authorisation for the novel food without reference to the proprietary scientific evidence or scientific data protected in accordance with Article 26 of Regulation (EU) 2015/2283 or with the agreement of Bioenergy Life Science, Inc. End date of the data protection: 16 April 2024 (5 years).
Cereal bars	0.20g/100g		
Fine bakery wares	0.31g/100g		
Chocolate confectionery (excluding chocolate bars)	0.17g/100g		
Milk-based drinks (excluding malts and shakes)	0.08g/100g		
Drinks intended to meet expenditure of intense muscular effort especially for sportsmen, isotonic and energy drinks	0.80g/100g		
Bars intended to meet expenditure of intense muscular effort especially for sportsmen	3.30g/100g		
Meal replacement for weight control (as drinks)	0.13g/100g		
Meal replacement for weight control (as bars)	3.30g/100g		
Confectionery	0.20g/100g		
Tea and infusions (in powder form to be reconstituted)	0.23g/100g		

10. [Regulation \(EU\) 2015/2283 on novel foods](#)

11. [Regulation \(EU\) 2019/506 authorising the placing on the market of D-ribose as a novel food under Regulation \(EU\) 2015/2283](#)

A FINAL WORD

It is regrettable that specialty food ingredients are held hostage to controversies about “processed” or “ultra-processed” foods, which go beyond them. It may be recalled that processing is not an adequate reference point when it comes to assessing the healthiness of a food and that it can help provide safer and more nutritious foods.

Specialty food ingredients are there for a reason: delivering nutritional, technological and health benefits, they play a key role in the creation of safe, nutritious, tasty, convenient, affordable and sustainable food and drink products. Their safety is ensured by thorough evaluations by food safety agencies. The world is facing multiple issues, from feeding a growing population in a sustainable way to tackling public health concerns, as well as meeting individual nutritional needs and dietary choices. A continued and open-minded focus on science-driven innovation is necessary in order to find solutions to the challenges of today and tomorrow.

TO KNOW MORE ABOUT SPECIALTY FOOD INGREDIENTS

Publications:

- 📄 Everything you always wanted to know about... food additives
- 📄 Everything you always wanted to know about... health ingredients

Infographics:

- 📄 Specialty food ingredients: additives in the safety spotlight
- 📄 How specialty food ingredients help meet specific dietary needs
- 📄 Specialty food ingredients: sustainable solutions for the food systems
- 📄 Specialty Food Ingredients: innovating to meet consumer needs

Animated videos:

- ▶ What are specialty food ingredients?
- ▶ How can I be sure that food additives are safe?
- ▶ Should I be afraid of processed food?
- ▶ Can specialty food ingredients add health benefits to our food?
- ▶ How can food reformulation help achieve healthier diets?
- ▶ Are there food ingredients solutions to meet individual dietary needs?
- ▶ What is the contribution of specialty food ingredients to sustainable food systems?
- ▶ Can specialty food ingredients help reduce food waste?

DISCLAIMER

This document is designed to provide insights about specialty food ingredients used in processed and “ultra-processed” foods. As such this document is not, and should not be construed as a guarantee or warranty, nor a part of any contractual or other legal obligations on behalf of EU Specialty Food Ingredients and its member companies. This information is offered solely for the consideration, investigation and verification of interested parties.

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