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How Food Safety and Quality of Artisanal Foods are Addressed?

Food safety and quality are major concerns of consumers and DG Santé, in charge of food policy in the EU¹. The overall EU approach is to maintain the highest level of safety to consumers. European regulations are based on the principle that food operators are responsible for the safety and quality of their products.

These regulations aim to ensure consumer protection by setting safety objectives to be achieved while leaving professionals free to define the means of achieving them. Assessing the safety of traditional and biopreservation-based manufacturing processes can be challenging for artisanal food producers (from EU or exporting to EU), as well as defining sampling schemes to ensure food safety requirements are met.

1. What are artisanal foods?

1.1. Definition of artisanal foods

To date, there is no EU definition of artisanal foods, but some countries specified the conditions of production associated with such quality products². In general, in order to stand out, artisanal products verify at least one of the following elements underneath. These criteria relate either to the intrinsic qualities of the product (raw material components) or to the manufacturing process.

1. Raw material can originate from one producer and be transformed on the place where it is produced. The main ingredients or a substantial part of the ingredients must have intrinsic qualities. For example, unprocessed, without additives, etc.
2. The product described as artisanal must be the result of a manufacturing, processing, repair or restoration process whose activities can have manual aspects, an authentic character, developing a certain know-how based on tradition.
3. The products are usually made at small-scale manufacturing or within a small and well-defined area.
4. Artisanal product may be less standardized than manufactured products due to less standardized processing conditions and possible heterogeneity of the raw material.

¹ <https://www.eufic.org/en/food-safety/article/what-are-food-safety-risk-assessments-and-why-are-they-used>

² See e.g. [Guidance Note No 29, The Use of Food Marketing Terms, Food Safety Authority of Ireland, 2015](#)

Characteristics of artisanal food can be set by different quality schemes such as Product Designation of Origin (PDO); Protected Geographical Indication (PGI) or Traditional Specialty Guaranteed (TSG?)³. In some cases, artisanal products are covered by specific regulatory frameworks at the regional level, something which is in part clearly stated, differently as the so-called ‘natural products’⁴.

1.2. Role of diversity in artisanal food products

Artisanal food products usually benefit of an undeniable and recognized richness of taste. Many of them come from complex production systems such as fermentation that give them their specific taste characteristics. These characteristics are linked to various biodiversity factors, such as microbial communities brought by ingredients and environments of production, the practices or technologies and the know-how of the artisanal food producers.

Europe is known for being rich in traditional food products, and they constitute not only a vital part of the local heritage but also an important part of many local economies. For example, the production of Mediterranean artisanal foods plays a key role in the development of rural regions, since the agricultural commodities used as raw materials are generally produced locally, allowing and stimulating local commercialization, thus contributing to a sustainable environment, employment of the rural population, and preservation of local heritage. Next to that, European consumers have become more attracted to less processed foods⁵ and are opting more and more for artisanal foods produced in smaller structures, as they are perceived as sustainable products with fine organoleptic properties. For developing countries, artisanal productions are gaining more interest since they help food industries to differentiate and increase market competitiveness and are sources of local employment.

2. What kind of hazards can be associated with these foods?

Like other food products, artisanal foods may be potential vehicles for the transmission of foodborne diseases due to inadequate hygienic and manufacturing practices or final products’ microbial instability. Although the relative importance of artisanal products compared to other food products is hard to determine, they have been associated with several outbreaks of listeriosis, salmonellosis and shiga-toxin producing *Escherichia coli*. In France, over the period 2006-2015, for salmonellosis outbreaks for which a food product was identified as the cause (27% of the outbreaks), and for products for which the manufacturing circuit was known (less than 25% of them), approximately half of the products were classified as artisanal or produced at the farm⁶. Likewise, Spain reported a well-known listeriosis outbreak in 2019 associated with the consumption of a chilled roasted pork meat with a total of 222 confirmed cases⁷. However, for most of the outbreaks, the indication on the mode of production is not provided, which makes it impossible to analyze this factor.

Artisanal foods may thus pose health risks to consumers as they are often produced with variable, less standardized productive processes and, in some cases, are directly consumed

³ https://ec.europa.eu/info/food-farming-fisheries/food-safety-and-quality/certification/quality-labels/quality-schemes-explained_en

⁴ See e.g. [Draft Decree regulating artisan food](#) from Galicia

⁵ Monteiro, C. A., Cannon, G., Moubarac, J. C., Levy, R. B., Louzada, M. L. C., & Jaime, P. C. (2018). The UN Decade of Nutrition, the NOVA food classification and the trouble with ultra-processing. *Public health nutrition*, 21(1), 5-17.

⁶ [ANSES \(2018\)](#)

⁷ <https://www.who.int/csr/don/16-september-2019-listeriosis-spain/en/>

without any cooking. Further, information to consumers (especially at-risk population) on storage and/or cooking practices, can be unclearly provided notably for products sold in local markets.

3. How the safety of artisanal foods is ensured?

3.1. Regulation

The European legislation on food safety, grouped under what is commonly known as the 'hygiene package', defines the conditions on the entire food production chain, to ensure the most effective food safety standards and the highest level of protection of human health possible.

To increase food safety, there is an option to apply flexibility in regulations on small food enterprises, provided this flexibility does not jeopardize the rights of citizens to acquire safe products⁸ (article 14 - 178/2002). The European Union actively encourages the development of national guides to good practice for hygiene and for the application of HACCP principles^{9,10}. Many of them integrate business operations, such as good manufacturing practices (GMP), GHP and HACCP. The European Guide for Good Hygiene Practices in the production of artisanal cheese and dairy products is a good recent illustration of this recommendation¹¹.

3.2. What can science bring to artisanal food products

Artisanal foods can be elaborated using non-mechanical procedures which may lead to variations in the processing conditions and heterogeneous food formulations. This is mainly attributed to the fact that several food processes are based on artisanal methods in which producers have gained experience over different generations and don't shift to a more standardized and mechanized production. This fact combined with the scarcity of knowledge of the national and international trade rules are some of the existing problems that must be tackled through a more standardized approach oriented to quality and safety improvement. Implementation of quality certifications may serve to protect production methods as well as to increase quality assurance thus providing consumers' confidence in a more globalized market. In this framework, management of food productions is a fundamental aspect consisting of a decision-making process about the quality and safety of a food product coming from a certain lot.

Predictive microbiology is a branch of food microbiology by which microbial responses in foods can be anticipated by using fit for purpose models. In this framework the routine and successful use of mathematical models by the food industry, governmental or educational agencies, will depend on the development of appropriate and useful tools (software packages and on-line platforms). The increased use of models in the food industry might depend on the availability of user-friendly software, which encompasses predictive models and allows different users to retrieve information in a rapid and convenient way.

⁸ <http://www.efsa.europa.eu/en/efsajournal/pub/5432>

⁹ <https://www.fsai.ie/assets/0/86/204/ddd8c357-62df-4e70-b705-086e5f31f630.pdf>

¹⁰ <https://webgate.ec.europa.eu/dyna/hygienelegislation/index.cfm?action=search>

¹¹ https://ec.europa.eu/food/sites/food/files/safety/docs/biosafety_fh_guidance_artisanal-cheese-and-dairy-products_en.pdf

While a wide range of food safety software tools is currently available ¹², the use of the current decision-making tools for assessing food safety and quality of artisanal food production is somehow limited since food operators often need advice on the use of such tools. Indeed, artisanal elaborations may consider additional factors or processing variable only applicable to specific regional or local commodities so that predictive models cannot be easily extrapolated to artisanal foods. Moreover, specific adaptations are needed for this kind of products, such as bio-intervention strategies. These strategies include the application of functional starter cultures and plant-based antimicrobials. These extra hurdles together with the application of appropriate process thanks to the modelling tools could ensure product safety and longer shelf-life. The ARTISANEFOOD project's ¹³ main goal is to provide an easy-to-use food safety decision support IT tool based on predictive microbiology, to reduce and control food-borne pathogens in artisanal fermented foods of meat or dairy origin produced in Mediterranean region. This will undoubtedly improve the market of artisanal products which are part of Mediterranean culture, biodiversity and economy which deserve to be investigated and protected.



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¹² Tenenhaus-Aziza, F., Ellouze, M. (2015). Software for predictive microbiology and risk assessment: A description and comparison of tools presented at the ICPMF8 Software Fair. Food Microbiology, 45, Part B, 290-299.

¹³ <http://www.ipb.pt/artisanefood/>