VALSalm - Validation of the safety of raw-cured sausages against *Salmonella*

Summary

Cured-matured minced meat products such as fuet, llonganissa and chorizo are raw products which have undergone a salting and curing-maturing process sufficient to give them the organoleptic properties that are highly appreciated by consumers. Furthermore, these foods are stable at room temperature, a characteristic associated with physical-chemical properties, mainly low water activity (a_w), which in the finished product usually has values below the growth threshold for pathogenic and spoilage micro-organisms. However, self-stability is not necessarily a guarantee of safety and raw cured-matured sausages are frequently reported in the RASFF (European Rapid Alert System for Food and Feed) due to non-compliance with microbiological criteria established for *Salmonella* and even due to their involvement in outbreaks.

From an industrial perspective, food business operators must ensure, through the implementation of self-monitoring based on the Hazard Analysis and Critical Control Point (HACCP) methodology, that the products they manufacture, process or distribute are safe. For this reason, they must put in place pre-requisite programmes that will provide them with a solid foundation and a HACCP plan focusing on product or process specific hazards and their prevention. One of the key aspects of HACCP is the validation of control measures, which requires scientific evidence to demonstrate that the identified hazards can be satisfactorily controlled.

In order to ensure the food safety of raw cured-matured sausages in relation to *Salmonella* it is necessary to evaluate and improve the efficiency of the production process in relation to pathogen lethality. This procedure requires a good characterisation of the evolution of the key parameters (acidification and drying) as well as the validation of the lethality of the process, either through inoculation studies such as challenge tests with *Salmonella* or by means of specifically selected surrogate enterobacteria, a methodology that needs to be developed. Additionally, an innovative approach can be applied by combining the results of the challenge tests with tools from predictive microbiology, which allows a better exploitation of the results and a quantitative assessment of the risk associated with the variability inherent to the product and production process.

Objectives

The main objective of the project is the development and application of a methodological approach to validate the safety of the production process of raw cured-matured sausages against *Salmonella* through challenge tests with enterobacteria and predictive microbiology.

Description of the actions planned in the project

Activity 1. Collection of available information and generation of new data in relation to raw-cured sausages
Activity 2. Selection of a strain and development of a pool of enterobacteria as a surrogate for *Salmonella*
Activity 3. External process validation through challenge tests with *Salmonella*
Activity 4. In-house validation of the raw-cured sausage production process by means of surrogates

Activity 5. Use of the results obtained by simulating different scenarios through the application of predictive models
Activity 6. Dissemination of the results obtained in the project of interest to the sector

Expected results and practical recommendations

- Characterisation of the raw cured-matured sausages and production process by each of the companies, selection of the highest risk scenarios in relation to *Salmonella* and sampling plan.
- Quantification of the lethality of the production process on *Salmonella* for each of the tested products through challenge tests with *Salmonella* and enterobacterial surrogates.
- Food safety assessment of the raw-cured sausages under study considering levels of *Salmonella* contamination and inactivation during the fermentation/maturation process. Validation of the process.

Leader of the Operational Group

ORGANISATION: SPLENDID FOODS, SAU

Coordinator of the Operational Group

ORGANISATION: IRTA - Institute of Agrifood Research and Technology

Other members of the Operational Group (grant recipients)

ORGANISATION: BOADAS 1880, SA
ORGANISATION: NOEL ALIMENTARIA, SAU
ORGANISATION: EMBOTITS SALGOT, SA

Subject area(s) of application

☐	Agricultural production system
☐	Agricultural practice
☐	Agricultural equipment and machinery
☐	Livestock farming and animal welfare
☐	Vegetable production and horticulture
☐	Landscape / Territorial management
☒	Pest and disease control
☐	Fertilisation and nutrient management
☐	Soil management
☐	Genetic resources
☐	Forestry
☐	Water management
☐	Climate and Climate Change
☐	Energy management
☐	Waste and by-product management
☐	Biodiversity and environmental management
☒	Food quality/processing and nutrition
☐	Supply chain, marketing and consumption
☐	Competitiveness and agricultural and forestry diversification

☒ General

Geographical area(s) of application

PROVINCE(S)	REGION(S)
Barcelona, Girona	Baix Empordà, Gironès, Garrotxa, Vallès Oriental

Dissemination of the project (publications, conferences, multimedia, etc.)

Different dissemination actions are planned to effectively explain the project and report the results, and reach the whole target public included in the scope of the project (agri-food sector from primary production, processing and distribution through to consumers): sectoral conference, informative article and video, infographics and publishable report. Dissemination will be carried out through the dissemination channels of the participating companies and IRTA (social media, newsletters and/or website).

Project website

More information on the project

PROJECT DATES	TOTAL BUDGET
Starting date: July 2021	**Total budget:** €244,224.00
	DACC funding: €112,942.08
Current status: Under way	**EU funding:** €85,201.92
	Own funding: €46,080.00

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