Prevention and mitigation of mycotoxin occurrence in cured sausages (Mico-ECur)

Summary

Ripened cured meat sausages are traditional foods consumed in different areas around the world. Their importance in the market is significant since consumers demand they be of high quality and safe and they are of high economic importance for the companies that produce them because they are sold at a higher price than products cured for shorter periods.

The risk of contamination of long-ripened cured sausages with mycotoxins due to the presence of mycotoxigenic fungi during the drying and ripening process justifies the search for strategies based on the control of environmental conditions and the use of competitive microbiota. Both the control of environmental factors and the use of competitive microbiota can be used as agents to control the growth of mycotoxigenic fungi and the formation of mycotoxins.

Objectives

The main objective of the project is to develop different types of strategies, some focused on the conditions of the process and others on the use of competitive microbiota to prevent the growth of potentially mycotoxigenic fungi and the formation and accumulation of mycotoxins in long-ripened cured sausages. Through the proposed work plan, new knowledge will be generated in relation to risk factors regarding the presence of mycotoxins in long-ripened meat products (contaminated raw material, ingredients, process parameters, etc.) which should help resolve an issue that in the near future may be important for both the primary pig sector and the processing sector. Long-ripened cured meat products are the most appreciated by consumers and therefore have a higher economic return for processors, with higher prices paid for the type of raw meat material used.

Description of the actions planned in the project

- ACTIVITY 1 - STUDYING THE PREVALENCE AND QUANTIFICATION OF THE RISK OF EXPOSURE TO MYCOTOXINS ASSOCIATED WITH THE CONSUMPTION OF CURED SAUSAGES
  - A1.1. Identifying and assessing the incidence of risk factors and quantification of the risk of exposure to mycotoxins.
  - A1.2. Determining the incidence of mycotoxigenic fungi and mycotoxins.
  - A1.3. Characterising the mycotoxin production capacity depending on the product and process parameters.
- ACTIVITY 2 - EVALUATING STRATEGIES TO CONTROL MYCOTOXIN FORMATION
  - A2.1. Impact of different ingredients and environmental conditions on the growth of mycotoxigenic fungi and mycotoxin formation
  - A2.2. Assessing the ability of competitive microbiota to inhibit the growth of mycotoxigenic fungi.
- ACTIVITY 3 - DEVELOPING PROTOCOLS AND VALIDATING STRATEGIES FOR THE CONTROL AND MITIGATION OF RISK ASSOCIATED WITH THE PRESENCE OF MYCOTOXINS
  - A3.1. Establishing protocols and validating selected strategies.

Expected results and practical recommendations

Some of the expected results of the project are as follows:

- Identifying and assessing the incidence of risk factors for fungal growth and thus for mycotoxin production.
- Quantifying the level of mycotoxin exposure of the population associated with the consumption of cured sausages.
- Mycotoxin production capacity depending on the product and process parameters in the production of cured meat products.
- Identifying the conditions that may favour or limit ochratoxin formation as a basis for the design of strategies to be assessed in the laboratory/pilot plant.
- Understanding the effect of the use of competitive microbiota in inhibiting the growth of mycotoxigenic fungi in cured sausages.
- Guidelines/strategies validated under industrial conditions to prevent the growth of mycotoxigenic fungi and the formation and/or accumulation of mycotoxins.

The results obtained will also enable the participating companies to make progress in regulating the issue and to have sufficient knowledge in this area to be able to adopt corrective measures and not be affected by crises associated with the presence of mycotoxins in cured sausages. Given that these companies represent the Catalan cured sausage sector, these results can be extrapolated to the Catalan meat sector (sectoral impact).

Leader of the Operational Group

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ORGANISATION: IRTA - Institute of Agrifood Research and Technology

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)
GIRONA LLEIDA BARCELONA	GARROTXA GIRONA PLA D'URGELL BARCELONA

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

https://www.innovacc.cat/2021/08/30/__trashed/

https://www.innovacc.cat/2022/07/27/7-projectes-aprovats-de-la-linia-grups-operatius-2021-projectes-amb-ajut-dacc/

Project website

More information on the project

PROJECT DATES	TOTAL BUDGET
Starting date: July 2021	**Total budget:** €246,511.63
	DACC funding: €113,999.99
Current status: Under way	**EU funding:** €86,000.00
	Own funding: €46,511.64

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Order ARP/113/2021 of 20 May, approving the regulatory bases for grants for cooperation for innovation by promoting the creation of European Association for Innovation operational groups in the areas of agricultural productivity and sustainability and the execution of innovative pilot projects by those groups, and Resolution ACC/1660/2021, of 27 May, announcing the call for the grant.

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