

Additive-free cured hams

Summary

The project to be carried out by Pernils Llémèna, SA consists of obtaining an additive-free cured ham, which maintains the same level of food safety as conventional hams.

The safety of cured ham has historically been based on the slightly acidic pH of the meat combined with the use of sodium chloride and nitrifiers. This combination prevents the development of bacterial flora, and in particular the bacteria *Clostridium botulinum* and the formation of its toxin, which is responsible for botulism, a serious illness that can be fatal.

In order to eliminate nitrifiers and ensure the safety of the product, the company will carry out a study on the evolution of the *Clostridium botulinum* bacterium while the ham is processed under various conditions, in order to confirm the appropriate processing methodology.

Objectives

- Develop a cured ham without additives which is safe for human consumption.
- Study how the production process of cured ham affects the evolution of the bacterium *C. botulinum* under various conditions.
- Determine the working conditions that prevent the development of the bacterium *C. botulinum* and the generation of its toxin.
- Improve the company's competitiveness with the new product line.
- Provide a response to the market with a commitment to natural products.
- Expand the range of clients and enter new domestic and international markets with the new product range.

Description of the measures planned in the project

- a. Coordinate the project. This includes a definition of the process validation method and a literature search.
- b. Simulate the process in predictive microbiology
- c. Develop an isolated drying pilot plant
- d. Define and select the batch of samples that will participate in the study
- e. Select and acquire various strains of *C. botulinum*
- f. Perform the challenge test in 4 stages.
- g. Define the new packaging design.
- h. Promote the new product at markets and events of interest and disseminate the results achieved through the EAI.

Expected results and practical recommendations

The main results expected are the identification of the growth or otherwise of *C. botulinum* in the various stages of the ham curing process.

The study will cover the first 6 stages of the process (reception, salting, post salting I, post salting II, drying I and drying II). It is not needed in the storage room stage, as the conditions that could be optimal for the growth of the bacterium under study no longer apply.

The following parameters will be monitored in each stage studied:

- Initial contamination level.
- Temperature.
- Water activity (aw).
- pH levels of the meat.

The process will also be simulated as predictive microbiology, and finally the challenge test will take place in 4 stages, and *C. botulinum* counted in each one.

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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	La Garrotxa

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

A page from the commercial catalogue promoting the preservative-free product is attached to this document.

Project website

Pernils Llémèna's work consists of drying hams for its partners, and as such it does not market the product directly, but instead does so through its partners; which is why it does not have its own website. However, the partners do advertise the product, as seen on the following websites:

<https://www.valent.es/ca/productes/pernil-serrano/pernil-serrano-desossat-reserva-sense-conservadors/>

<http://www.noel.es/ca/producte/curats/delizias-curats/pernil-serra-120g/>

More information on the project

PROJECT DATES	TOTAL BUDGET
Start date (month-year): July 2019	Total budget: €28,449.08
Completion date (month-year):	DARP funding: €11,626.55
Current status: Underway	EU funding: €8,770.91
	Own funding: €8,051.62

With funding from:

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Order ARP/133/2017 of 21 June, 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 ARP/1282/2018, of 8 June, announcing the call for the grant.



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