

GENDUROC - Authentication of Duroc breed pork products using genetic markers

Summary

Consumers increasingly think of Duroc pork products in terms of a high-quality brand. However, no legislation has yet been drafted that regulates the identification of products using the name of Duroc and there is no system to verify this denomination, like the one used with Iberian ham products. In their absence, various producers have called for the implementation of a self-monitoring programme for the label which is at least able to reject a batch of products labelled as Duroc 100% or 50% which does not come from Duroc parents (both pigs for 100% Duroc, or at least one of them for 50% Duroc) registered in an official pedigree of the breed.

DNA analysis means that it is possible to identify species, breeds and individuals according to the number of unique or specific genetic variants of each one. This project aims to look for exclusive and/or specific DNA variants of the Duroc breed that enable batches of products erroneously identified as 100% or 50% Duroc to be rejected.

Objectives

The overall objective of the project is to begin a process for validating an authentication system for meat products with the Duroc label.

- Objective 1: Confirm the capacity of the *MC1R/KIT1* polymorphic system to reject products labelled as 100% or 50% Duroc which do not meet those conditions.
- Objective 2: Identify a range of exclusive and specific markers that enable identification of Duroc products within a reference population.
- Objective 3. Develop and validate an efficient genotyping protocol for markers suggesting Duroc in meat products that may potentially be tracked.

Description of the measures planned in the project

The project consists of three experiments - one for each objective:

- Experiment I: An *MC1R/KIT1* marker validation test using samples with a known percentage of Duroc genes.
- Experiment II: A trial to identify new exclusive or specific markers of the reference Duroc population.
- Experiment III: A field study to fine-tune the genotyping protocol in commercial products.

Expected results and practical recommendations

- Validation of the usefulness of markers associated with the typical earthy red skin colour of Duroc pigs to reject batches of products erroneously identified as 100% or 50% Duroc.
- Identification of 12-20 new exclusive and/or specific Duroc markers in the reference lines of the participating companies. The extension of candidate genetic markers to differentiate Duroc products

increases the reliability of correctly authenticating the Duroc origin of the meat and meat products marketed using this label.

- Proposal for a genotyping protocol of markers identified as exclusive and/or specific to Duroc, which is effective for validating products using the Duroc label under commercial conditions.

The results of the project will lay the foundations for the development of a self-monitoring programme for the labelling of Duroc products based on genetic markers. As a tool for quality control, implementing a programme of this type aims to improve transparency in the sector, to enhance pork meat and by-products and above all, to increase consumer confidence in products with a Duroc label.

Leader of the Operational Group

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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)
BARCELONA GIRONA	OSONA GIRONÈS

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

<https://www.innovacc.cat/2019/11/21/projectes-presentats-en-la-linia-de-grups-operatius-2019-del-darp/>

<https://www.innovacc.cat/2020/06/29/6-projectes-presentats-en-la-linia-de-grups-operatius-2019-del-darp-obtenen-resolucio-favorable/>

Project website

More information on the project

PROJECT DATES	TOTAL BUDGET
Start date (month-year): July 2020	Total budget: €106,000.00
Completion date (month-year):	DARP funding: €43,320.00
Current status: Underway	EU funding: €32,680.00
	Own funding: €30,000.00

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Generalitat de Catalunya
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