Using meat by-products to obtain bioactive hydrolysates with antimicrobial properties (BIOPEPTIDES)

Summary

Antibiotics are drugs used in both human and veterinary medicine for the treatment and prophylaxis of infectious diseases caused by bacteria. Although the first antibiotics were discovered less than 90 years ago, it was not until the 1940s that they were widely used for the treatment of infections. Therapeutic use of antibiotics as a disease control measure is one of the most important achievements in medicine, helping reduce mortality and morbidity from bacterial diseases. Over the years, in both human and veterinary medicine, antibiotics have been susceptible to incorrect and indiscriminate use, producing a negative impact on individual and public health, as well as the resulting emergence of antimicrobial resistance. This has led to the search for new alternatives.

Objectives

The main objective of this project is to **obtain new protein hydrolysates from different meat industry by-products with antimicrobial activity. It also considers identifying the peptides responsible for the antimicrobial effect in the hydrolysate with the greatest potential.**

Description of the actions planned in the project

- Selecting and characterising raw materials (slaughterhouse by-products) for the production of hydrolysates
- Processing hydrolysates
- Pre-selection of protein hydrolysates by functionality
- Characterising the selected hydrolysates
- Stability of protein hydrolysates functionalities during gastrointestinal transit
- Prioritising pre-selected protein hydrolysates
- Hydrolysate production at the pilot plant
- Identifying the most common peptides in the selected hydrolysate
- Determining the bioactivity of selected peptides
- Demonstrating in vitro efficacy of the selected protein hydrolysate
- Characterising and assessing the digestibility of the waste generated in producing the selected hydrolysate
- Patentability
- • Dissemination of the project

Expected results and practical recommendations

This project will develop new protein hydrolysates with antimicrobial activity from meat industry by-products for incorporation into animal feed as an alternative to antibiotics. Thus, these new antimicrobial hydrolysates will help alleviate the problem of antibiotic resistance caused by the overuse of antibiotics. With the objective of obtaining zero waste, the aim is to recover the residual material from the hydrolysis of meat co-products as an ingredient for animal feed, after it has undergone a characterisation and digestibility study.

Leader of the Operational Group

ORGANISATION: ANDRÉS PINTALUBA, SA

Coordinator of the Operational Group

ORGANISATION: INNOVACC CATALAN MEAT AND ALTERNATIVE PROTEIN CLUSTER

Other members of the Operational Group (grant recipients)

ORGANISATION: MATADERO FRIGORÍFICO DEL CARDONER, SA

Other members of the Operational Group (not recipients of the grant)

ORGANISATION: ROVIRA I VIRGILI UNIVERSITY - URV FOUNDATION

ORGANISATION: UNIVERSIDAD AUTÓNOMA DE BARCELONA - APPLIED AND ENVIRONMENTAL MICROBIOLOGY RESEARCH GROUP

ORGANISATION: INSTITUTE OF AGRIFOOD RESEARCH AND TECHNOLOGY - CENTRE FOR ANIMAL HEALTH RESEARCH - ANIMAL HEALTH PROGRAMME

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 TARRAGONA GIRONA	BAGES GARROTXA BAIX CAMP

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

Innovacc Ordinary General Assembly, 20 June 2022: https://www.innovacc.cat/wp-content/uploads/2022/09/0-Presentacio_AG_INNOVACC_20jun2022.pdf (page 30)
Innovacc Journal 2022: https://www.innovacc.cat/wp-content/uploads/2022/07/disseny-revista-innovacc-2022_BR.pdf (page 20)
https://www.innovacc.cat/2022/07/27/7-projectes-aprovats-de-la-linia-grups-operatius-2021-projectes-amb-ajut-dacc/

Project website

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

More information on the project

PROJECT DATES	TOTAL BUDGET
Starting date: July 2021	**Total budget:** €196,392.98
	DACC funding: €90,822.49
Current status: Under way	**EU funding:** €68,515.21
	Own funding: €37,055.28

With funding from:

Project funded through Operation 16.01.01 (Cooperation for Innovation) through the Catalan Rural Development Programme 2014-2022.

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.

Generalitat de Catalunya
Departament d'Acció Climàtica, Alimentació i Agenda Rural

Fons Europeu Agrícola de Desenvolupament Rural:
Europa inverteix en les zones rurals