Valorisation of the cultivation of pulses by developing new products and innovative ingredients

Summary

Due to their health benefits, their potential in the development of innovative foods, the need to establish a "gourmet" market, and the amount of pulses that are imported annually, it is necessary to increase both their consumption as well as our cultivation and knowledge of these crops. In this context, this project takes advantage of the research undertaken to date and the knowledge of various research groups, and taking into account the current market situation of pulses, aims to develop new high-quality products with added value that can compete with developed products, using animal proteins which increase the demand for pulses and open up new routes to market in innovative formats, thereby promoting their consumption and cultivation.

Objectives

The main objective of the project is to develop new products with a high rate of innovation and high added value using flours and other new ingredients obtained from pulses. This will not only open up new commercial opportunities for producers and farmers, but also increase the cultivation and consumption of pulses. The new products developed will be suitable for people who do not consume animal products, or who are allergic to gluten, and will meet the needs of consumers who are increasingly conscious of the relationship between food, health and well-being.

Description of the actions carried out in the project

The actions planned in the project are:

- Action 1: Characterisation study of the raw material, and selection of the optimal varieties.
- Action 2: Obtaining pulse flours, and study of their nutritional, techno-functional and bioactive properties.
- Action 3: New applications of pulse flours in the food industry.
- Action 4: Development of new protein-rich vegetable products.
- Action 5: Valorisation study of the by-products obtained during the processing of pulses for the development of new foodstuffs.
- Action 6: Development of prediction models using the project's own infra-red technology as a sample analysis and quality control tool.

Final results and practical recommendations

Taking into account the actions described above, the anticipated results are:

- Action 1: Publications in informative articles and/or literature reviews in journals in the field of post-harvest, food technology and gastronomy.
- Action 2: A detailed report of the functional properties of flours and the protocols required to use them as ingredients in the development of new foodstuffs.
- Action 3: (I) Development of a new baked product using pulse flours, and (II) development of innovative products using pulse flours or their hydrolysates to optimise their properties and reduce the need for synthetic additives.
- Action 4: (I) Development of a plant-based drink using the pulses identified in the tasks above, (II) a new tofu-type product and (III) use of those products to develop a "gourmet" product or products focused on a specific consumer group, e.g. athletes.
- Action 5: (I) A detailed report on the functional properties of the by-products created during the processing of the pulses and (II) development of a product using pulse by-products.
- Action 6: Models predicting the chemical, techno-functional, rheological and nutritional characteristics of flours, by-products and products from the processing of pulses.

Conclusions

The aim is to develop new products, especially flours, with high added value which can compete with developed products using animal proteins, which increase the need for pulses and open up new routes to market in innovative formats, thereby promoting their consumption and cultivation. The potential of the major pulses will be studied, focusing on those grown in Catalonia and those with the most nutritional value. Calibration will not be essential when making pulse flours, which can provide an outlet for surpluses from the field (non-commercial sizes, seeds that are broken but healthy), and can also increase the demand for pulses and make crop rotation including pulses more profitable and attractive for the producer. This aspect will also be studied, and the hydrolysates obtained from developing innovative foods with extra added value such as a longer shelf life will be used, and the potential of other pulses to be used as a raw material for the development of this type of food will be studied. By-products are obtained from the processing of pulses, which are currently used in applications with low profit levels: the composition and properties of these by-products will be examined, and their potential for reintroduction into the food industry by developing new foodstuffs will be considered. Finally, models will be developed to predict the chemical, technical-functional, rheological and nutritional characteristics of the flours and other products developed in the actions above, using the project's own infra-red technology.

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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)
Lleida – Miralcamp.	Pla d'Urgell.

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

Project website

More information on the project

PROJECT DATES	BUDGET APPROVED
Start date (month-year): July 2020	Total budget: €80,409.00
Completion date (month-year):	DARP funding: €45,833.13
Current status: Executed	EU funding: €34,575.87
	Own funding: €34,461.00

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