Eureka
Project partners Search Form

Program (select appropriate)**:**

[X] EUREKA

Multilateral/Bilateral Call *(if applies)**:***

[X] Spain and Türkiye bilateral call – 2026

[ ] CLUSTER

[ ] CELTIC-NEXT
[ ] EUROGIA^{2030}
[ ] ITEA4
[ ] SMART
[ ] Xecs

Thematic Call *(if applies)**:***

[ ] Xecs Quantum Tech

Contact Person Details	
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Organization Details:			
Name: Furya Nanofiber Food R&D Engineering Project Consultancy Trade Inc.			
Country: Türkiye	Website:		
Type of Organization:	[X] SME [ ] Research Inst.	[ ] Large Company [ ] Administration	[X] University [ ] Other (specify):
Number of Employees:	[X] < 10 [ ] 101-250	[ ] 11-50 [ ] > 250	[ ] 51-100

Describe the activities, products, services, and expertise of your organization:

- Production of biodegradable packaging materials
- Extraction of plant-based proteins from low-value food residues
- Functional modification of plant proteins for a better food ingredient
- Extraction of valuable products, such as antioxidants, phenolics, and anthocyanins, from food residues
- Active and intelligent biodegradable packaging development

Project Details	
Project Title	
Acronym	
Keywords	

Describe your Project:

The proposed project presents a sustainable, innovative approach to converting byproducts generated in the oilseed processing industry into high-value-added plant protein components. Hazelnut meal, a byproduct of hazelnut oil production—a significant agricultural product in Turkey—is currently used to limited effect. Under this project, the oil fractions and other lipophilic components remaining in the meal after cold pressing will be removed by supercritical CO2 extraction. This process has been preferred over hexane for the removal of oil and other lipophilic compounds. This is because hexane-based extraction processes negatively affect the suitability of the resulting protein-rich residue for human consumption, leaving hexane residues, and raise environmental concerns due to excessive chemical use.

The oil-free, protein-rich residue obtained after extraction will be utilized as raw material to produce protein nanofibrils. These nanofibrils can be considered as next-generation plant-based protein components capable of performing structural, emulsifying, or texturizing functions in food systems. Thus, the project will contribute to the development of new protein-rich food components using agricultural by-products.

This approach also brings together three key elements that support plant-based food innovation:

- Sustainable protein production from local agricultural waste streams,
- The utilization of agricultural by-products in accordance with circular economy principles,
- The application of advanced processing techniques capable of maximizing the functional properties of plant-based proteins.

Another significant contribution of the project is its role in making the plant-based protein supply chain more sustainable. The transformation of agricultural byproducts into high-value-added protein components will both reduce environmental impacts and facilitate the development of next-generation plant-based food products. In this way, the project will contribute to the development of more sustainable, plant-based, protein-focused food systems.

The primary ecosystem the project will focus on is Türkiye. As one of the world's leading hazelnut producers, Türkiye offers a strong supply of raw materials and an industrial infrastructure for this project. The use of local hazelnut processing by-products will directly contribute to Türkiye's plant-based protein innovation ecosystem and enable the application of developed technologies to similar oilseed by-products in other countries.

Describe the innovative part of your project:

The proposed solution is based on integrating sustainable, innovative food processing technologies. The core technology for the project is SC-CO_2 extraction, which enables the environmentally friendly, solvent-free, and selective removal of residual oil and lipophilic components from oilseed by-products (particularly hazelnut meal). This

method is safer, more sustainable, and better suited to food applications than traditional solvent-based extractions. The second main process complementing this technology is the production of protein nanofibrils. The oil-free, protein-rich matrix obtained after extraction will be processed under controlled pH and temperature conditions to restructure the proteins, forming nanoscale fibrillar structures. These nanofibrils will be evaluated as a new generation of plant-based protein components capable of exhibiting superior functional properties—such as emulsion stability, gel-forming capacity, and texture enhancement—thanks to their high surface area and unique structural characteristics.

The innovative aspect of the project lies in the integrated use of these two technologies. Obtaining an optimized protein matrix via SC-CO_2 extraction yields a purer, more functional starting material that supports nanofibril formation. This will enable the development of higher-performance, value-added products compared with traditional plant protein processing methods. Additionally, this approach contributes to the circular economy model by utilizing agricultural by-products through advanced technologies.

Describe the market expectations of your project:

Demand for plant-based proteins is growing rapidly in line with consumer trends focused on both health and sustainability. In Türkiye and within the Excel4Pro ecosystem, interest is particularly rising in alternative protein sources, functional ingredients, and clean-label products. In this context, the project will focus on the segment of plant-based protein ingredients with high functional properties, which is currently limited in the market. As part of the market exploration, target customer segments (food manufacturers, plant-based product developers, and ingredient suppliers) will be identified through industry reports, company analyses, and direct stakeholder interviews.

In the current market, plant-based proteins are typically derived from legumes, including soy, peas, and wheat. While these products are widely available, they often have limitations in taste, allergenicity, and low-functional performance. Furthermore, most of these proteins are sourced from primary agricultural resources, and solutions based on by-products are limited. The proposed solution offers a more competitive structure than other products in the following ways:

- ✓ Sustainability advantage using agricultural by-products (hazelnut meal)
- ✓ An environmentally friendly extraction technology, such as SC-CO_2
- ✓ Enhanced functional properties thanks to protein nanofibrils

The key distinction of the project lies in its ability to convert agricultural by-products into high-functional plant-based protein components using advanced processing technologies. This approach offers advantages such as lower environmental impact, next-generation functional ingredients, and the use of local, sustainable raw materials.

Possible Partner Profile:		
Type of Partner Needed (multiple choices are allowed)	[X] SME [X] University [ ] Administration	[X] Larger Company [ ] Research Institution [ ] Other (specify):
Describe the expertise of possible partner(s) required for your project: The expertise of the possible partner could be in Food Science, Food Production, Food Packaging, formulation of new food products, and food ingredient development.		
Describe the role of possible partner(s) in your project: The planned production of plant-based protein nanofibrils will be further utilized to develop functional foods and food ingredients, such as thickeners, emulsifiers, and stabilizers. The role of a potential partner should include experience in the production of functional foods and food ingredients, such as additives.		

Deadline for Partner Search: 15 December 2026