



InnoSol4Med

Innovative sustainable solutions for ready-to-eat traditional Mediterranean products and non-conventional healthy foods

Section 2



Thematic Area: Agro-food value chain

Budget: 1.601.412,42 €

Duration: 36 months

Project website: <https://innosol4med.unist.hr/>

State and Coordinator entity:

CROATIA,
University of Split

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Other in Consortium:

Partner 1, GREENER Ltd. – CROATIA; Partner 2, Centaurus Ltd. – CROATIA; Partner 3, University of Bologna – ITALY; Partner 4, Università Cattolica del Sacro Cuore – ITALY; Partner 5, Martino Rossi S.p.A. – ITALY; Partner 6, Spanish National Research Council – SPAIN; Partner 7, DOMCA S.A. – SPAIN; Partner 8, Çukurova University – TURKEY; Partner 9, Chouaib Doukkali University – MOROCCO; Partner 10, Sidi Mohamed Ben Abdellah University – MOROCCO.

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Problem statement and key objectives

The goal of the InnoSol4Med project revolves around developing and marketing healthier foods through an innovative concept: upgrading ingredients from nutritious to functional using mild technological solutions. Modern lifestyles lead to a reliance on highly processed foods with compromised nutritional value. In response, InnoSol4Med will use mild food processing and biopreservation techniques to retain the food's nutritional value while enhancing its functional properties and safety.

The **main objectives** of InnoSol4Med project are:

1. To **introduce innovative matrices** (essential oils, natural compounds/extracts) from **sustainable sources** (agro-food by-products) and **autochthonous microbial strains**, as **new functional ingredients and solutions** for the improvement of quality, safety, nutritional value and functionality of traditional foods and development of **new food products** in synergy with non-thermal **innovative technological solutions** (ozone, nanoemulsions, fermentation),

2. Measuring **consumer attitudes and preferences** for low-processed and healthy ready-to-eat foods (RTE) in order to **propose new and tailored business models** and awareness campaigns that can support the adoption and exploitation of the innovative solutions developed in the project.

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Brief summary of the methodology

Laboratory Research:

- **Bioactive Compounds from by products and plant material**
- Extraction and optimization of natural bioactive compounds, including oils from by-products and medicinal plants, followed by characterization using chromatographic techniques.

- **In Vitro Testing:** Antioxidant and antimicrobial properties
- Mechanisms of action will be studied with flow cytometry and predictive microbiology tools.

Lactic Acid Bacteria (LAB):

- Isolation from naturally fermented products and characterization using molecular and antimicrobial methods.
- Predictive microbiology will be used to identify the best strains for use in food prototypes. **Folate-Producing LAB**

Non-Invasive Technologies:

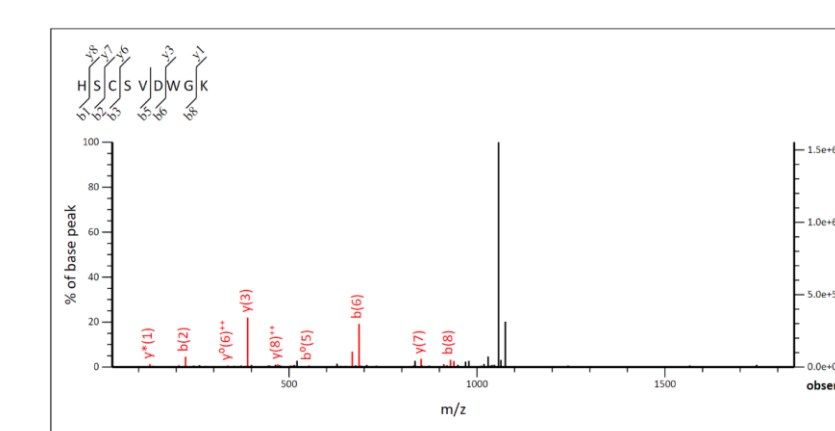
- Ozone technology
- Nanoemulsions

In Vitro Digestion:

The dynamic Gastrointestinal Simulator (simgi®) will be used to study nutrient digestibility, bioaccessibility, and microbiota interactions of the bioactive compounds.

Market Analysis and Business Strategy:

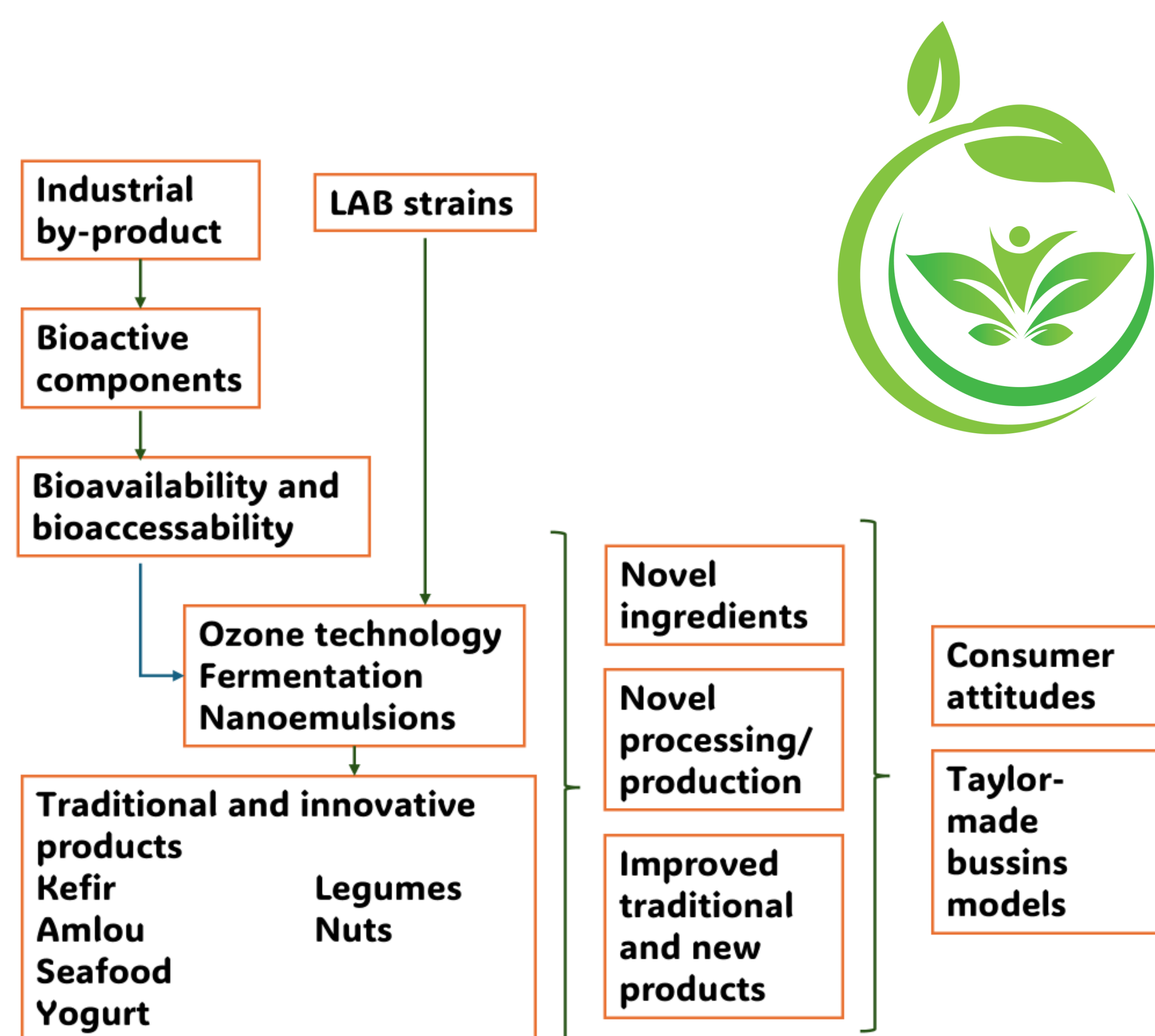
- market opportunity analysis, business strategy development, consumer awareness activities, and cross-country consumer surveys.
- **Consumer Preferences/Consumer Awareness Campaigns/Business Strategy**
- **Pilot-Scale Trials:**
- **Innovative Fermented Products** using LAB and bioactive compounds.



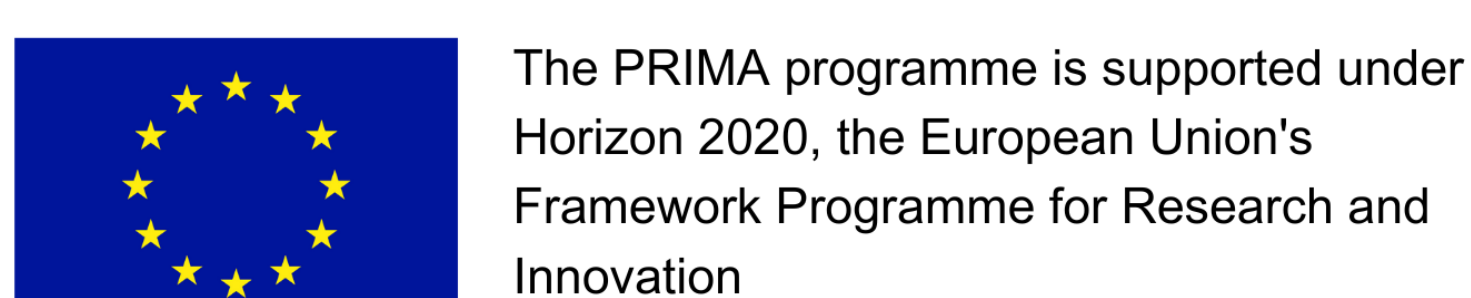
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Key exploitable results

- **Development of Sustainable Ingredients:** New food ingredients will be derived from essential oils (EOs), natural compounds, and extracts from agro-food by-products and Mediterranean plants. These ingredients will be tested for stability during non-thermal processing and digestion, contributing to the EU's zero-waste challenge.
- **Improved Food Safety and Quality:** such Non-invasive food preservation methods, as ozone technology and nanoemulsions, will be developed to enhance food safety and prolong the shelf life of products without compromising their nutritive value.
- **Innovative Fermented Products:** The project will optimize fermentation processes for nuts, legumes, and traditional Mediterranean fermented foods. This will lead to the development of high-protein alternative products that are healthier and more sustainable.



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