

NOVel Antimicrobial coatings and PACKaging in the Mediterranean (NOVAPACK)

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Introduction

The NOVAPACK project addresses the growing need for sustainable solutions in the food packaging sector, focusing on the valorization of agri-food waste. In the Mediterranean region, the food industry generates significant quantities of by-products such as non-conforming fruits, peels, pomaces, and seeds. These residues are currently underutilized, yet they represent an abundant, renewable, and low-cost source of valuable compounds including fibers, vitamins, minerals, and phenolic compounds with recognized bioactive and antimicrobial properties. NOVAPACK aims to exploit these by-products to develop cost-effective, biodegradable antimicrobial films and coatings that extend the shelf life of minimally processed foods. Special attention is given to key Mediterranean crops like citrus fruits, pomegranates, tomatoes, grapes, and olives.

Objectives

- ✓ Valorize food industry by-products as raw materials for new packaging applications.
- ✓ Extract and optimize the obtaining of fibers, antimicrobial compounds and pigments from food by-products.
- ✓ Characterize the physicochemical, nutritional, functional and microbiological properties of the materials.
- ✓ Develop and optimize bio-based coatings and films adapted to Mediterranean food products.
- ✓ Provide scalable and integrative solutions to reduce environmental impact across the food supply chain.

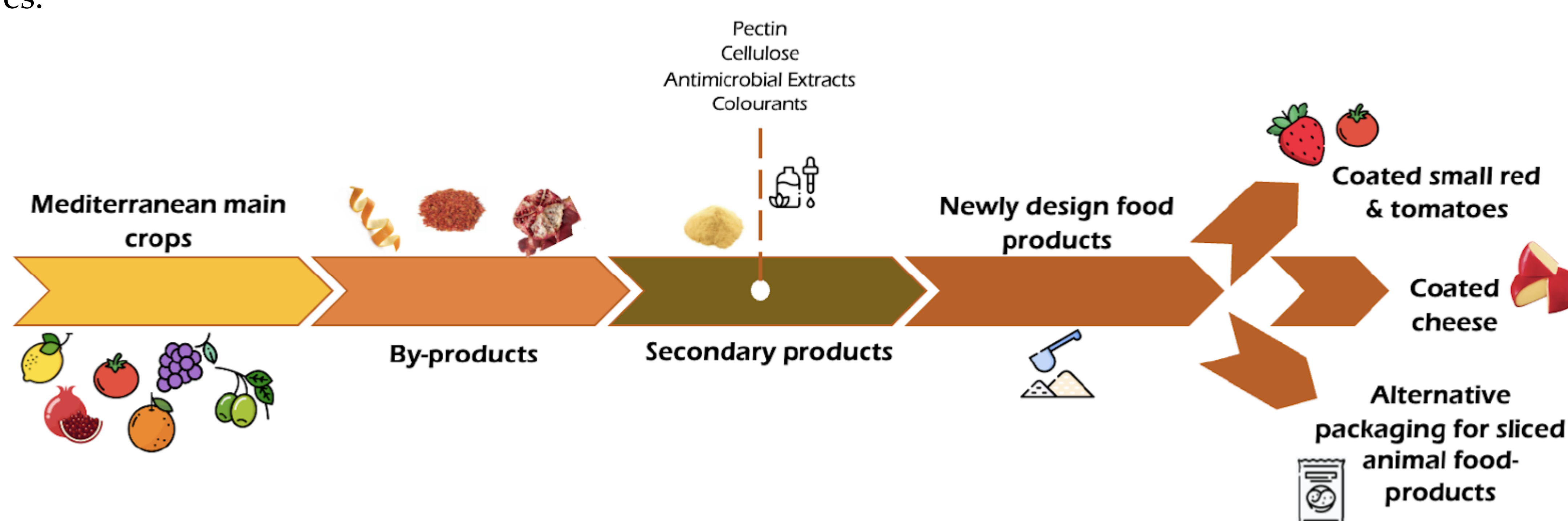


Figure 1: Integrative action plan of the NOVAPACK project.

Expected Results

- ✓ Validated extraction and formulation processes for bioactive compounds with optimized functionality.
- ✓ Characterization data (physicochemical, nutritional, functional and microbiological properties) demonstrating the efficacy, functionality and safety of the materials developed.
- ✓ Biodegradable packaging prototypes based on extracted fiber, antimicrobial compounds and pigments from Mediterranean agri-food waste.
- ✓ Enhanced food preservation through antimicrobial properties incorporated into coatings and films.
- ✓ Reduction in plastic use and food waste, contributing to circular economy practices in the Mediterranean agri-food sector.

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