

# Safe fruits for a healthy and secure life

The application of multifunctional metabolites produced by microorganisms and natural compounds, both GRAS (generally safe), will ensure that consumers have access safe and high-quality foods.



Ecuador / Chile / Colombia



## Bio-protectors for postharvest preservation

### The implemented initiative

Improve the safety and nutritional quality of small fruits postharvest through the formulation and application of Multifunctional Bio-protectors (MBs). Three prototypes of MBs with antimicrobial-antifungal-antioxidant capacity will be selected in vitro. The aim is to increase safety by up to 50% and determine the effect on the

functional properties of fruits after the use of MBs. A technical-economic feasibility study of the generated MBs will be carried out. Finally, knowledge management, transfer and communication of the results obtained will be carried out.

## Safe fruits for our market

### The technological solution

Multifunctional Bio-protectors (MBs) will become a commercial product to improve the food safety of postharvest fruits through natural conservation from farms to the consumer, and it will be a solution to

mitigate potential losses due to pathogen contamination and reduce the risk of diseases transmitted by the consumption of contaminated food.

**DEVELOPMENT OF NOVEL MULTIFUNCTIONAL BIO-PROTECTORS FOR FRUIT SAFETY POSTHARVEST**

Recent advancements in biotechnology have focused on developing sustainable and natural bio-protectors to enhance the perishable fruits' shelf life and safety.

An enthusiastic team of researchers from Universidad Técnica del Norte (UTN-Ecuador), Universidad de Antioquia (UdeA-Colombia), and Universidad de Talca (UT-Chile) with financial support of FONTAGRO-BID, are developing bio-protectors based on bioactive molecules from probiotic bacteria, natural products, and plant hormones as an eco-friendly alternative to chemical preservatives, aligning with the growing demand for clean-label products.

The project led by Prof. Dr. Gabriela N. Tenes, UTN-Ecuador, in collaboration with Prof. Dr. Miguel-Angel Puertas-UdeA, and Prof. Dr. Carlos R. Figueroa-UT, and the associated organizations "Terperetti S.A." from Ecuador and "Frutimar A.O." and "S.A.T. Frutillas Chanco-Pelluhue" from Chile, will test the novel bio-protectors in cape gooseberries (*Physalis peruviana*) and strawberries (*Fragaria x ananassa*).

This coating creates a thin barrier that prevents the attachment and proliferation of harmful microorganisms, while preserving the fruit's sensory and healthy qualities.

The benefits of these multifunctional bio-protectors include:

- Increased food safety by minimizing pathogen contamination.
- Extended shelf life by slowing down microbial spoilage.
- Reduction in post-harvest losses, especially during storage and transport.
- Increased healthy-promoting components in food.
- Natural and biodegradable alternative to synthetic chemicals.

With consumer interest in sustainable agriculture and natural preservation methods, this initiative could become a key innovation in fruit preservation strategies, supporting both environmental goals and food security initiatives.

MÁS INFO



## Results

Prototypes of Multifunctional Bio-protectors for postharvest conservation

