



Coop Research Program | Call 1

Novel approach to biologically control spoilage of fresh vegetables using naturally produced reuterin

Background

Pre-washed, fresh-cut, minimally processed fruits and vegetables are a fast growing market answering the consumer's demand for convenient, ready-to-use food products. Problems arising with minimal processing are short shelf life and high product loss due to microbial spoilage, and intoxication caused by several pathogens. Water washing with or without chlorine is routinely used as a cleaning step, but there are concerns about effectiveness and risks for consumer and environmental health. So far, an efficient, safe and easily applicable method to control microbial contamination on fresh produce is lacking.

Objective

The overall research objective is to establish the natural antimicrobial reuterin produced from glycerol by the food-grade bacterium *Lactobacillus reuteri* as a novel method to reduce bacterial load on fresh produce. This would result in increased safety, decreased spoilage, and shelf life expansion.

Research Approach

Investigation and testing of different strategies for producing reuterin for biopreservation of food; analysis of antimicrobial activity of enriched and crude reuterin preparations; comparison of the effectiveness of antimicrobial properties of reuterin against commonly used chlorine treatments; analysis of degradation and decomposition products of reuterin when used on fresh vegetables.

Relevance and Expected Outcomes

This project will (1) lead to a novel, efficient and natural method using reuterin for the disinfection of vegetables and biological control of minimally processed vegetable products, (2) design and optimize processes for efficient production of food-grade reuterin bioingredients; (3) identify reuterin degradation products; and (4) establish the safety of reuterin. The results will be a catalyst to extend the application of reuterin in other food products or for plant protection and close a scientific gap that currently prevents industrial application of reuterin for biopreservation.

Food System Challenges Addressed

Food safety, Reduction of food waste and loss, Food value chain optimization.

www.worldfoodsystem.ethz.ch/research/research-programs/CRP

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Project Cost 278'000 CHF

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