



Coop Research Program | Call 4

Application of *Lactobacillus reuteri* to naturally prevent *Campylobacter* colonization of chicken

Background

Chicken meat is a good source of high-quality lean protein; however, consumption of chicken meat is the main source of bacterial *Campylobacter* infection of food. *Campylobacteriosis* is actually the most frequently reported food-borne illness in the European Union, causing large economic losses for chicken farmers. The use of probiotics to protect against disease is considered a sustainable strategy for the control of pathogens in animal feeding. A bacteria commonly found in the chicken gastrointestinal tract, *Lactobacillus reuteri*, can produce reuterin, a potent antibacterial system. Use of *Lactobacillus reuteri* as a probiotic in chicken to combat *Campylobacter* infection is a possible safe and effective intervention to increase food safety.

Objective

The main objective of this project is to investigate a novel microbial-based approach to naturally reduce *Campylobacter* contamination of chicken flocks and, ultimately, chicken meat, using the probiotic *Lactobacillus reuteri*. The goal is to ascertain different sustainable approaches to control human *Campylobacter* infections in the food chain.

Research Approach

This project will first discover *Lactobacillus reuteri* with high reuterin production from Swiss chickens and test the antimicrobial activity of the produced reuterin on *Campylobacter* bacteria. Selected *Lactobacillus reuteri* will then be applied to eggs and feed of newborn broiler chicks to test for efficacy of the probiotic treatment. State-of-the-art

technologies including ion chromatography with pulsed-amperometric detection will be utilized.

Relevance and Expected Outcomes

This project will close the scientific gap that still prevents the industrial application of reuterin producing *Lactobacillus reuteri* and antimicrobial reuterin. Results will provide novel, natural, efficient and sustainable ways to reduce *Campylobacter* contamination in chicken flocks and enhance meat safety.

Food System Challenges Addressed

Food safety, Sustainable production of healthy proteins, Reducing antibiotic use in animals.

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

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Project Duration 2017-2019

Project Cost 274'700 CHF

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