



## PROJECT 2013-2018

# BENEFICIAL EFFECTS OF MILK AND FERMENTED DAIRY PRODUCTS ON INTESTINAL AND ADIPOSE TISSUE INFLAMMATION, AND OBESITY LINKED CARDIOMETABOLIC DISEASES

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**Number of students trained (MSc, PhD, Post-Doc):**

**4**

**TOTAL BUDGET**

**\$1,044,230**

### INVESTMENT PARTNERS



Agriculture and Agri-Food Canada



## OBJECTIVE:

The main objective of this project was to test the hypothesis that milk and fermented dairy products (fermented milk, cheese and yogurt) could counteract obesity and susceptibility to cardiovascular disease and type 2 diabetes by modulating inflammation in gut and fat tissues. This hypothesis was tested in 2 studies with mice and a study in pigs where animals were fed a high fat, high sucrose diet supplemented with various dairy products— skim milk concentrate, Greek style yogurt, fermented milk, commercial medium Cheddar cheese and butter.

## KEY OUTCOMES:

- In the mice studies, no changes in body weight gain or cardiovascular function were observed as a result of supplementation with dairy but there was evidence that yogurt and fermented milk may have protected the gut from inflammation induced by consumption of high fat, high sucrose diet.
- In the pig study, supplementation with cheese or butter had no effect on body weight gain but resulted in a decrease in blood inflammatory markers; cheese had beneficial anti-inflammatory effects in the gut (colon); butter had similar beneficial anti-inflammatory effects in the liver and fat tissue.
- Supplementation with yogurt and fermented milk in the mouse diets and butter in the pig diet was associated with modulation in gut microbiota (bacteria) thought to be beneficial in reducing inflammation.
- Overall, results suggest that fermented milk products and dairy fats (in the form of milk, cheese, yogurt and butter) could have beneficial effects on inflammation in the liver, gut and fat tissue.

## BENEFITS TO THE DAIRY INDUSTRY

Provides mechanistic evidence for the beneficial effects of dairy products on development of obesity and type 2 diabetes by reducing inflammation via modulation of gut microbiota.