



PROJECT 2013-2018

DAIRY NUTRITION AND RISK OF DIABETES IN VULNERABLE POPULATIONS: A NOVEL BIOMARKERS-BASED APPROACH

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**Number of students trained
(MSc, PhD, Post-Doc):**
3**TOTAL BUDGET****\$925,800****INVESTMENT PARTNERS**
 Agriculture and
Agri-Food Canada
**OBJECTIVE:**

The current global epidemic of type 2 diabetes (T2D) is particularly serious among vulnerable populations, including some minority groups, Indigenous populations and those experiencing poverty. Although growing evidence suggests that the consumption of dairy products may reduce the risk of developing T2D, there has not been many studies involving vulnerable populations.

The present project was designed to investigate whether fatty acids in dairy have a role in reducing T2D risk via reducing risk factors such as insulin resistance, poor insulin secretion and inflammation in four population groups.

KEY OUTCOMES:

Using data derived from four population groups including multi-ethnic and indigenous populations, the study revealed:

- Higher levels of fatty acids derived from dairy consumption (C15:0, C17:0, C16:1-9t, and C18:1-11t) reduced risk for developing T2D by improving insulin secretion and insulin sensitivity.
- Higher levels of C15:0, a dairy-derived saturated fatty acid, was also associated with reduced T2D risk by reducing pro-inflammatory markers, in addition to improving insulin secretion and insulin sensitivity.
- Optimal vitamin D status was found to be associated with lower risk of T2D. Dairy intake was an important contributor to optimal vitamin D status.

BENEFITS TO THE DAIRY INDUSTRY

Provides strong mechanistic evidence for the beneficial role of dairy consumption and dairy fat, in reducing the risk of developing T2D.

SCIENTIFIC PUBLICATIONS

Traditional foods and 25(OH)D concentrations in a subarctic First Nations community. 2016.
ncbi.nlm.nih.gov/pubmed/28156417

Individual serum saturated fatty acids and markers of chronic subclinical inflammation: the Insulin Resistance Atherosclerosis Study. 2017.
ncbi.nlm.nih.gov/pubmed/28928169

Association of Directly Measured Plasma Free 25(OH) D With Insulin Sensitivity and Secretion: The IRAS Family Study. 2017.
ncbi.nlm.nih.gov/pubmed/28609823

The distribution of fatty acid biomarkers of dairy intake across serum lipid fractions: The Prospective Metabolism and Islet Cell Evaluation (PROMISE) Cohort. 2019.
ncbi.nlm.nih.gov/pubmed/31429083