MILK AND DAIRY PRODUCTS, OUTSTANDING SOURCES OF VITAMIN B\textsubscript{12}: A FARM TO FORK APPROACH

OBJECTIVE:
Dairy products are considered to be important sources of vitamin B\textsubscript{12} in the human diet. However, the concentration and absorption (bioavailability) of B\textsubscript{12} in various dairy products is unclear.

This study examined B\textsubscript{12} content and bioavailability in a number of dairy products, compared the availability of B\textsubscript{12} in dairy products with that of a vitamin supplement and examined the possibility of estimating milk B\textsubscript{12} concentrations from the infrared spectra produced in the routine analysis of milk.

KEY OUTCOMES:

- Using a simulated digestion system, the stability of vitamin B\textsubscript{12} in a gastrointestinal environment was demonstrated.
- Different dairy products showed different vitamin release profiles during simulated digestion, which could influence their absorption.
- Cheddar cheese had the best bioavailability of vitamin B\textsubscript{12} among the tested dairy products or compared to synthetic B\textsubscript{12}.
- Using the pig as an experimental model of human digestion, it was demonstrated that B\textsubscript{12} present in cheddar cheese is ~ 2 times more available than the same amount of B\textsubscript{12} provided by a synthetic vitamin supplement.
- A new method was developed to reliably estimate the content of vitamin B\textsubscript{12} in milk.

BENEFITS TO THE DAIRY INDUSTRY

- Confirmed that dairy products are good and reliable sources of vitamin B\textsubscript{12} in the diet of Canadians.
- Demonstrated that vitamin B\textsubscript{12} from cheddar cheese is ~ 2 times more available than a vitamin supplement.
- Developed a new rapid, low-cost method that can be used to reliably estimate the content of vitamin B\textsubscript{12} in milk.

SCIENTIFIC PUBLICATIONS

Bioavailability of vitamin B\textsubscript{12} from dairy products using a pig model. 2018. ncbi.nlm.nih.gov/pubmed/30134590

Impact of diet management and composition on vitamin B\textsubscript{12} concentration in milk of Holstein cows. 2019. ncbi.nlm.nih.gov/pubmed/30774051