Extended Shelf Life:
New Research Hopes to make Naturally Omega-3 Enriched Milk and Butter Stay Nutritious Longer

The Canada Food Guide recommends eating at least two servings of fish each week. Seafood is the main source of important long chain omega-3 fatty acids (LCn-3FA). Consumption of these fatty acids, namely DHA and EPA (docosahexenoic and eicosapentaenoic acids, respectively), is related to good cardiovascular health, reduced development of chronic disease in adults and normal development of eye and brain function.

Mark Rose, an M.Sc. student at Nova Scotia Agricultural College (NSAC), is part of a large research team that is working to develop nutritionally enhanced dairy products using marine algae as the source of LCn-3FA.

Studies have shown that modern diets are deficient in these fatty acids. Dwindling fish stocks and changing dietary preferences have sparked an interest in finding alternative sources of these nutrients.

His project focuses on the shelf life of enriched milk and butter. Specifically, Mark is researching the oxidative stability of naturally enriched omega-3 butter and milk and the contribution of natural antioxidants in the cow diet to shelf life.

Mark says that development of oxidative stability and good shelf life, of butter and milk that are naturally enriched with both LCn-3FA and antioxidants is an important factor in the development of these natural products.

Mark administered four treatments to Holstein cows to evaluate the interaction between forage type (pasture or silage- based total mixed ration) and LCn-3FA supplement on oxidation stability of milk.

Animal performance was monitored and milk samples were collected. Butter was manufactured and the dairy products are being evaluated for their oxidative stability. Early results support the hypothesis that pasture provides more antioxidant compared with silage, and that this would be conferred to milk.

Hailing from the picturesque community of Change Islands, Newfoundland, Mark set his sights on Nova Scotia and NSAC with its promise of small class sizes and the opportunity to work directly with animals.

Initially intent on studying pre-veterinary medicine, Mark's studies took a different turn and after finishing his fourth year project he enrolled in the Master of Science program at NSAC in 2006.

Mark has managed to stay on a tight time track to complete his MSc on schedule. He has some wise words for students considering graduate studies.

“Write good objectives, and stick with them,” says Mark. “It will keep your program focused, on track and on time.”

Mark is now analyzing the samples he collected and is preparing to start writing his thesis. He is within sight of graduating this fall.

The research is supported by the Atlantic Canada Opportunity Agency’s Atlantic Innovation Fund and Technology Development funding agencies in partnership with regional dairy processing and production sectors. The project is led by a team of researchers, including Mark’s supervisor Dr. Alan Fredeen, and Drs. Vasantha Rupasinghe, Bruce Rathgeber and Susanne Budge.

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