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The Experts' FORUM



Feature Article:

*What's in Canadian
Milk?*

What's in Canadian Milk?

Throughout the years, milk has attracted food processors for its health attributes and functional benefits. It has also managed to gain a certain amount of notoriety albeit from special interest groups and competing product manufacturers.



Much scientific research has been carried out on milk and milk components over the past decade with some impressive results being published by many different centers around the world. Yet misleading information and urban myths persist in clouding the true facts on what is and isn't in milk.

How many vitamins and nutrients are there in milk? Are there hormones in milk? Do dairy farmers give antibiotics to cows and if so, do they show up in the dairy products we purchase and use? These and other questions have been raised by food processors whose level of awareness on food safety and traceability issues is growing daily as a result of the media attention being devoted to these issues. The problem is, not all media reports and studies are well researched and/or are simply a re-hashing of out-dated material used to re-enforce a particular point of view.

The purpose of this article is to present the true facts regarding the actual composition and micro-biological specifications for Canadian milk so that companies who purchase dairy ingredients for use in further processing activities have the most up-to-date and accurate information to support their product development needs.

Rich in Vitamins and nutrients:

Milk contains more than 14 vitamins and nutrients. Its rich variety of nutrients makes it an important basic food for any balanced diet.

- The high calcium content in milk and dairy products puts it in a class by itself. Trying to match the body's requirements with calcium supplements and substitute's is tricky and leaves out all the other important nutrients found in milk like protein and potassium.
- The proteins contained in milk are high quality, meaning that they contain all the essential amino acids and nutrients that our body is incapable of producing.
- Milk and dairy products are an important source of vitamins. They provide us with complex B vitamins, such as riboflavin, and vitamin A.
- Vitamin D is added to milk to facilitate calcium absorption and strengthen our bones. One glass of milk provides 44% of our daily vitamin D requirements.

Source: Nutrient Value of Dairy Foods, Dairy Farmers of Canada

A more detailed breakdown of the vitamins and nutrients content found in the various types of milk is highlighted on page on page 4.

Milk Safety Regulations:

The quality and safety of milk is not only a priority in the Canadian dairy industry, but it is also a legal matter. Several measures are in place to ensure that the milk consumed by Canadians or used in finished food products is not compromised.

At the farm, producers ensure that their cows remain in excellent health. The milk that is produced by healthy cows is picked up at the farm every two days. The driver must first test the milk for temperature, appearance and smell before loading it into the truck. The quality of the milk is tested again when it is delivered to the processing plant. Samples are also taken at the plant for additional quality assurance purposes.

The Dairy Farmers of Canada's *Canadian Quality Milk Program (CQM)* also ensures the purity and safety of the milk supply. The CQM program is a HACCP-based on-farm food safety program. The purpose of the program is to satisfy consumers and dairy ingredient users and their demand for a safe food supply that is of the highest quality.

Pasteurization also plays a very important role in the safety and quality of milk. Pasteurization is the process in which milk is heated for a period of time depending on the heating temperature. This process helps destroy potentially harmful micro-organisms that might be found in the milk. All dairy products must be pasteurized before being sold. The only exception is raw milk cheese. Regulations require a minimum 60 day ripening period at the end of which the raw milk cheese is safe to consume.

What's not in Milk?

The artificial growth hormone *recombinant bovine somatotropin (rBST)*, which stimulates milk production in cows, is **banned** in Canada. Health Canada rejected the idea of licensing the hormone in January 1999 due to animal welfare concerns. This is not the case in the U.S. where this much talked about synthetic growth hormone was approved for use in milking cows by the Food Drug Administration in November 1993.

In regards to antibiotics, cows, like humans, occasionally suffer from conditions that require the use of antibiotics. When a cow is treated with antibiotics, its milk is rejected until no trace of antibiotics remains in its system. Testing is performed in strict compliance with the standards set out in the *Food and Drugs Act and Regulations* (Health Canada).

With the regulations set out by Health Canada and the rigorous testing programs set out by the Canadian dairy industry itself, food processors can be assured that Canadian milk and dairy products are held to a very high standard for safety and quality.

High quality milk translates into high quality food products:

With such high quality standards and strict regulations, finished food product manufacturers using Canadian dairy products have the assurance that their ingredients come from the purest high quality milk produced anywhere on the planet. Top quality ingredients going in, means high quality finished foods going out !

Need more information?

Canadian food processors using dairy products and components that require more information are encouraged to contact any one of the following organizations:

Dairy Farmers of Canada (www.dairygoodness.ca) 801 McGill College Ave. Suite 1000 Montreal, QC H3A 2N4	Canadian Dairy Commission (www.cdc-ccl.gc.ca) Building 55, NCC Driveway, CEF 960 Carling Ave. Ottawa, ON K1A 0Z2 Tel: (613) 792-2000 Toll-free: 1-7866-366-0676 E-mail: cdc-ccl@agr.gc.ca
Agriculture and Agri-Food Canada (www.agr.gc.ca) Public Information Request Services Agriculture and Agri-Food Canada Sir John Carling Building 930 Carling Ave Ottawa, Ontario K1A 0C7 Telephone: (613) 759-1000 Fax: (613) 759-7977 E-mail: info@agr.gc.ca	Health Canada (www.hc-sc.gc.ca) Address Locator 0900C2 Ottawa, Ontario Canada K1A 0K9 Tel: (613) 957-2991 Toll free: 1-866-225-0709 Email: Info@hc-sc.gc.ca
Canadian Food Inspection Agency (www.inspection.gc.ca) 59 Camelot Drive Ottawa, Ontario K1A 0Y9 Tel: (613) 225-2342 Fax: (613) 228-4550 E-mail: cfiamaster@inspection.gc.ca	

Nutrient Value of Milk

	Whole Milk (≥3.24% M.F.)	Partly Skimmed (2% M.F.)	Partly Skimmed (1% M.F.)	Skim (0.1% M.F.)	Buttermilk (0.8% M.F.)	Chocolate, Partly Skimmed (2% M.F.)	Benefit
Measure	250 mL	250 mL	250 mL	250 mL	250 mL	250 mL	
Weight (g)	258	258	258	259	259	264	
Moisture (%)	88	89	90	91	90	84	
Kilocalories (kcal)	159	128	108	90	105	189	
Kilojoules (kJ)	663	536	453	380	440	793	
Protein (g)	9	9	9	9	9	8	Helps build and repair body tissues, even bones. Helps build antibodies to fight infection in the body.
Fat (g)	9	5	3	Tr.	2	5	
Saturated Fat (g)	5.4	3.1	1.7	0.3	1.4	3.3	
Cholesterol (mg)	35	19	10	5	9	18	
Carbohydrate (g)	12	12	12	13	12	27	
Sodium (mg)	123	129	129	133	272	159	
Potassium (mg)	391	398	402	431	392	446	Essential for maintaining the body's vital fluid balance. Important for the proper functioning of nerves and muscles.
Vitamin A (RE)	80	147	152	158	21	150	Helps maintain healthy skin, eyes and night vision. Essential for normal bones and teeth.
Thiamin (mg)	1.10	0.10	0.10	0.09	0.09	0.10	Helps convert carbohydrates into energy. Maintains a healthy appetite and helps normal growth.
Riboflavin (mg)	0.42	0.43	0.43	0.36	0.40	0.43	Helps maintain healthy skin, eyes and nerves. Helps convert food into energy.
Niacin (NE)	2.2	2.2	2.2	2.3	1.7	2.3	Important for growth and development, a normal nervous system and healthy digestive tract.
Vitamin B₆ (mg)	0.108	0.111	0.111	0.104	0.088	0.108	Helps protein build body tissue. Helps produce red blood cells and antibodies to fight infection.
Folate (µg)	13	13	13	13	13	13	Helps form red blood cells and genetic material for cells.
Vitamin B₁₂ (µg)	0.92	0.94	0.95	0.98	0.57	0.90	Contributes to healthy red blood cells. Helps maintain a healthy nervous system and digestive tract.
Pantothenic Acid (mg)	0.81	0.83	0.83	0.85	0.71	0.79	Helps turn carbohydrates and fat into energy your body can use.
Calcium (mg)	308	314	317	320	303	301	Important for strong, healthy bones and teeth. Helps the heart beat, muscles contract, nerves function and blood clot normally.

Phosphorus (mg)	240	245	248	261	231	269	Important for strong healthy bones and teeth. Contributes to the general functioning of the body.
Magnesium (mg)	34.7	35.2	36.0	29.4	28.4	34.9	Helps maintain strong healthy bones and teeth. Helps convert food into energy and build body tissue.
Zinc (mg)	0.98	1.01	1.01	1.04	1.09	1.08	Helps convert food into energy. Important for tissue repair and growth.

Source: Nutrient Value of Dairy Foods, Dairy Farmers of Canada