Conseil des industriels laitiers du Québec inc.

FACT SHEET # 5

Milk, a nutrient-dense food

Central to our diet, milk and dairy products are linked to our enjoyment and our health. Representing a variety of delicious products, they are extremely nutritious and an essential component of a healthy, balanced diet.

A time-honoured love affair

Milk is secreted by the mammary glands of female mammals such as cows, goats, sheep and even humans. Essentially, it is the food that ensures the development of newborns until they reach the age when they are able to diversify their diet.

However, since the beginning of time, milk from animal sources has been considered an excellent dietary supplement for humans of all ages. Its use dates back to the first permanent human settlements, more than 8,000 years BC, when the practice of rearing livestock became widespread. Mostly within the last century, though, milk has systematically become part of the human diet.

Today, milk and its derivatives form part of our daily dietary intake. They feature prominently in our grocery stores and supermarkets. Cow's milk is the main source for the manufacture of dairy products, although sheep and goat milk are also popular, either bottled or processed.

Properties of milk

Milk is a whitish, opaque fluid with a mildly sweet taste. It is a complex blend, composed primarily of water and also containing fat (lipids), proteins, sugars (carbohydrates) and minerals. Other minor constituents of milk include enzymes, vitamins and pigments.

The exact composition of milk varies depending on the animal species from which it comes, as illustrated in the table below. For example, sheep's milk is richer in proteins, fat and vitamins than other milks, human milk has a higher concentration of carbohydrates (lactose) and cow's milk stands apart by its mineral content.

Composition of various types of milk

Nutrient	**Type of milk**			
	Cow (/100g)	***Human (100g)***	***Goat (100g)***	***Sheep (100g)***
Protéin (g)	3,3	1.0	3,6	6,0
Caséin	2,7 (82%)	0,6 (60%)	- -	- -
Whey	0,6 (18%)	0,4 (40%)	- -	- -
Fat (g)	3,3	4,4	4,1	7,0
Lactose (g)	4.7	6,9	4,4	5,4
Minérals (mg)	0,7	0,2	0,9	1,0
Calcium (mg)	119	32	134	193
Phosphorus (mg)	93	14	111	158
Magnesium (mg)	13	3	14	18
Potassium (mg)	152	51	204	136
Vitamins	*Several*	*Several*	*Several*	*Several*
Riboflavin (mg)	0,16	0,04	0,14	0,35

Adapted from Miller, G.D., J.K. Jarvis et L.C.McBean – Handbook of dairy foods and nutrition –National Dairy Council, 2000

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Outstanding nutritional value

Milk is one of the only complete foods known in a natural state. It contains significant quantities of no fewer than 55 nutrients essential to life. There are only minor deficiencies in its composition, e.g., it is poor in certain nutrients, particularly iron, and it does not have any fibre.

Of particular benefit to children, milk can round out a healthy diet at all ages of life. As such, *Canada's Food Guide* recommends the daily intake of two to four portions of milk or dairy products, depending on age and nutritional requirements. One portion equals one eight-ounce or 250-mL glass of milk.

Milk and dairy products are an important source of minerals, including **calcium**, phosphorus and magnesium, which help build and maintain healthy bones and protect against osteoporosis. Those three minerals also have properties to help reduce hypertension.

Milk and its derivatives provide several other essential nutrients as well, including :

- Substantial quantities of **proteins**, at least enough to meet the daily needs of both children and adults. Those proteins help the body grow and stay healthy while providing energy. Milk proteins are complete and contain all the amino acids needed to produce tissues and blood. Casein is the dominant protein in milk (80%).
- **Vitamins**, including most of B-group vitamins and vitamins A and D, which help meet the body's energy needs, particularly in children.
- **Carbohydrates** (sugars), which are the primary source of fast release energy. Lactose is the primary carbohydrate in milk and acts as the favourite fuel for the brain and muscles. It optimizes the proper use of the calcium in milk.
- *Lipids* (fat), which are sources of energy and beneficial fatty acids (including omega-3). Additionally, they transport the vitamin A and D contained in milk.

Finally, since milk is about 87% **water**, it can be an excellent means of hydration. Athletes can attest to that fact.

Allergies and intolerance

In some individuals, drinking milk may be associated with adverse physiological effects. For example, persons who are allergic to milk proteins may develop skin, respiratory or gastrointestinal symptoms. Luckily enough, that type of food allergy affects young infants mostly. More often than not, they grow out of it by the time they are three, making the allergy extremely rare in adults.

Other individuals may be lactose intolerant, that is, unable to tolerate the sugars in milk. They do not produce enough (or any) lactase, an enzyme required to break down lactose in the digestive system. Lactose intolerance can cause various relatively minor gastrointestinal ailments. Persons who are lactose intolerant can, however, choose lactose-free dairy product.

Dairy processing: A few things to bear in mind

Milk must be treated before human consumption. It first needs to be processed to give it a longer shelf life. Being an exceptionally rich food, it can be transformed into a wide variety of dairy products with a number of different textures and tastes. Milk can be consumed after being either pasteurized or filtered, or it can be eaten in the form of raw milk cheese; it can be whole, skim, concentrated or powdered. As for derivatives, they can be found in many forms: yogurt, butter, cheese, ice cream, milk deserts, etc.

Quebec is the province with the largest production of milk in Canada, and has been home to a dynamic, diverse dairy manufacturing industry for many years. Quebec dairy products, and cheeses in particular, are renowned for their world-class quality and have been recognized in the most prestigious competitions. Milk and its derivatives have thus become part of our identity.