

What dairy products are made from milk?



How much do you know about the milk you may drink every day? Milk has many nutrients. Its composition can vary depending on the breed of cow used to produce it. However, milk is generally:

- 87.5% water
- 5% lactose, which is a form of sugar found in milk
- 3.75% fat
- 3.25% protein
- 0.7% minerals, including calcium

When it's time for milking, cows are moved into a milking parlour, a part of the barn where farmers keep the milking machines. Modern milking machines use computer technology and robotics to milk each cow once or twice a day. Some machines even let the cows decide when they are ready to be milked.

Eating Well with Canada's Food Guide identifies milk and alternatives as one of the four essential food groups. Do a web search using the terms "Canada's Food Guide" and "Milk and Alternatives."

What are the guidelines for healthy eating with this food group?

Do you ever wonder who builds the machines that make our lives easier? The people who design and build these specialized machines need to know about computers and robots, as well as have a good understanding of how to milk a cow.

Sixteen essential nutrients are found in milk. These nutrients include:

- Protein
- Calcium
- Potassium
- Phosphorus
- Magnesium
- Riboflavin
- Vitamin A
- Vitamin D
- Vitamin B12
- Vitamin B6
- Niacin
- Folate
- Pantothenic Acid (Vitamin B5)
- Selenium
- Thiamin
- Zinc

There are many dairy products that are made from milk. Cheese, yogurt, ice cream, and butter all have their beginnings with milk.

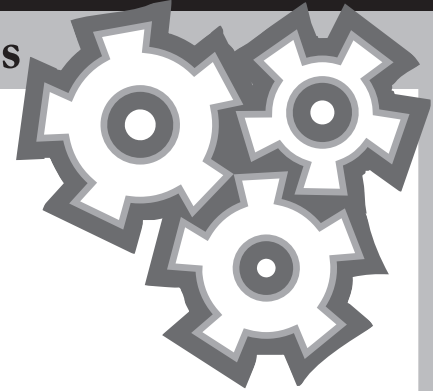
Cheese is made from the protein in milk. When **rennet**, an enzyme found in animal's stomachs, or a lactic acid is added to milk, it **curdles**, or separates the solids from the liquid. These **curds**, or solids, are then used to make cheese. The liquid that is left over is called **whey**. The whey is drained from the curds. The curds are then pressed into blocks or rounds.

The sugar, or carbohydrate, in milk is called **lactose**. Lactose goes through **fermentation**, the process that converts sugar into an acid. When it ferments, it makes an acid called **lactic acid**. This acid combines with the protein in milk to give yogurt its tangy taste and thicker texture.

Ice cream is made from cream. When the cream is combined with other ingredients, including fruit flavours and sugar, and then frozen, it makes ice cream.

Researcher's Corner

Exploring Numbers and Patterns



What quantities of dairy products do Canadians consume? The dairy products that Canadians consume have changed over time:

- The amount of whole milk has gone down.
- The amount of lower-fat milk has increased.
- The amount of ice cream and butter has gone down.
- The amount of cream, yogurt, and cheese has increased.

Why do you think the consumption of these products has changed?

What do the numbers below tell you about Canada's dairy production? Use the graph on the following page to fill in the proportion of each type of dairy product. You can also create your own graph on chart paper. Make a legend with the names of the products and colours. Add it to the graph. You can also add illustrations of each product to your legend. Make a title for your graph. Use these steps:

1. Choose a colour to represent each product.
 2. Make a legend. List the dairy products. Choose a colour for each product and show it in a box or line beside each product name.
 3. Express each decimal as a fraction out of 100. Then, colour in the correct number of blocks in the graph to represent the fraction for each product until all the squares in the graph are coloured in. For example, 7 blocks should be coloured with the colour you choose for ice cream and concentrated milks!
- 0.35 of Canada's total milk supply is made into milk and cream
 - 0.30 is made into butter
 - 0.28 is made into cheese
 - 0.07 is made into ice cream and concentrated milks

Title: _____

Interview an adult in your life, such as your parents or grandparent, to find out whether their milk consumption patterns have changed over time. What did you find out?



Play the *It's All in the Mix Interactive* on the *Moo2You* website at www.moo2you.ca/products.html. Use the Mix It Recipe Cards if you need help to make different dairy products.

How many different dairy products can you find?