

Different Types of Milk

Plain, pasteurized milk is recommended as part of a healthy diet for children and adolescents. Milk is an important source of calcium, phosphorous, vitamins A and D, B vitamins, and protein. Common varieties include whole milk (also known as Vitamin D milk), reduced fat (2%), low-fat (1%), and skim (fat-free).

However, you can now find many varieties of milk in the marketplace, including milk from other mammals or cow's milk that has been altered or changed in some way. Various milk types are growing in popularity, but there's also growing misperceptions and understandings of the nutritional value of these beverages. This document is intended to provide parents and caregivers clear, evidence-based information on milk types and the benefit of cow's milk.



Important Terms to Know

Pasteurized Milk: Cow's milk and other animal-based milk that has been heated to a specified temperature and for a specified length of time to kill pathogens that may be found in raw milk.

Plain Milk: Cow's milk and other animal-based milk without added caloric sweeteners, non-sugar sweeteners, or flavorings.

Flavored Milk: Cow's milk to which sweeteners and/or flavorings have been added for the main purpose of increasing palatability.

Defining Types of Dairy Milk

A2 Milk: Regular cow's milk that comes from cows that only produce A2 protein. The protein found in cow's milk comes from either casein (80%) or whey proteins (20%), which have different amino acid profiles and thus are digested differently.¹ A2 is a type of casein protein that some studies suggest may be easier for people to digest. It is important to note that this evidence is still quite limited.^{1,2}

Buffalo Milk: Milk produced by water buffalo. Though not commonly consumed in the U.S., buffalo milk is produced widely in India and Pakistan.

Goat Milk: Milk produced by goats. It is thicker and creamier than regular cow's milk. Goat milk is growing in popularity in the U.S. but is more commonly consumed in developing countries.

Lactose-Free Milk: Regular cow's milk with an added enzyme called lactase that helps break down lactose, the natural sugar found in milk. Lactose-free milk is a good alternative for people who are lactose intolerant, as it has a similar taste, texture, and nutrients as regular milk.

Organic Milk: Regular cow's milk that comes from cows that are raised according to organic farming practices. The cows must be allowed to graze on pasture, be fed organic certified feed, and may not be treated with drugs, such as growth hormones or antibiotics.³

Shelf-Stable Milk: Regular cow's milk that has been processed so that it can be stored for months without refrigeration. When stored properly, shelf-stable milk can be an excellent alternative to fresh milk as it keeps for long periods of time and has the same nutrients as fresh cow's milk. Examples include UHT or Aseptic milk, powdered milk, and evaporated milk.

Ultra-Filtered Milk:⁴ Regular cow's milk that has been filtered to leave some components like protein while removing others like lactose based on molecular weight. Ultra-filtered milk tends to be higher in protein and calcium than regular milk, while having half the naturally-occurring sugar content and virtually no lactose. Generally, these products are more expensive than regular milk, and sometimes have added non-sugar sweeteners.

Other Milk Drinks

Kefir: A beverage made by fermenting dairy milk. Kefir is low in lactose and high in probiotics – also known as “good” bacteria – which are good for gut health and function. Kefir can be used in place of milk, however, kefir has a more tangy or sour flavor similar to unsweetened yogurt.

Yogurt-Based Smoothies: Blended beverages combining yogurt with other foods such as fresh or frozen fruits and vegetables. Yogurt helps to boost the protein content of the smoothie as well as contribute probiotics to the diet; however, many packaged smoothies are also high in added sugars or non-sugar sweeteners.

Whey-Based Protein Drinks: A beverage made from whey protein which is found in cow's milk. Whey protein contains all the essential amino acids, making it a complete protein readily available for bodily absorption.⁵ Some studies have shown whey protein to be associated with muscle growth and weight loss; however, fat and protein levels vary depending on the type of whey and the science supporting these claims is not strong.⁶

Price Comparison*

	Cow's milk (whole)	2% or reduced fat milk	1% or lowfat milk	Skim or nonfat milk	Organic milk (skim)	Chocolate milk (lowfat)	Goat milk	Buffalo milk	Lactose-free milk (lowfat)	A2 milk (lowfat)	Ultra-filtered milk	Shelf-stable milk	Kefir
	\$	\$	\$	\$	\$\$	\$	\$\$\$\$	\$\$\$\$	\$\$	\$\$\$	\$\$\$	\$\$	\$\$\$\$
\$/gallon	3.19	3.19	3.19	3.19	6.99	3.99	21.20	51.98	9.38	10.83	12.28	7.99	17.96
\$/8 fl oz serving	0.20	0.20	0.20	0.20	0.44	0.25	1.33	3.25	0.59	0.68	0.77	0.50	1.12

*Pricing information sourced from grocery stores in Durham, NC, July 2024

\$ = up to \$5, \$\$ = \$5-10, \$\$\$ = \$10-15, \$\$\$\$ = \$15+

Common Questions About Milk

What type of milk is recommended for kids?

Plain pasteurized cow's milk is often recommended as part of a healthy dietary pattern in the U.S. because it is an affordable and readily available source of many key nutrients like protein, fat, calcium, vitamin D, vitamin A, vitamin B12, potassium, phosphorous, riboflavin, and niacin. Common varieties include whole milk (also known as Vitamin D milk), reduced fat (2%), low-fat (1%), and skim (fat-free). Importantly, dairy milk is a good source of several key nutrients of concern that kids generally aren't getting enough of -- potassium, calcium, and vitamin D.

What milk fat percentage is recommended?

Fat-free (skim) and low-fat (1%) milk, yogurt, and cheese are often recommended because they provide key nutrients without too many extra calories. However, there may be situations when a higher fat content of milk (2% or whole) is appropriate, such as when a child is refusing lower-fat varieties or is having difficulty gaining weight.

What if my child doesn't like plain milk?

If your child does not like plain milk, try other dairy sources like yogurt (unsweetened, unflavored), cheese, cottage cheese, kefir (unsweetened, unflavored), and smoothies made with milk and/or yogurt (unsweetened, unflavored). These options will provide the same key nutrients your child needs and should be considered over flavored milk to limit consumption of added sugars.

What if my child is lactose intolerant?

If your child has lactose intolerance, choose a lactose-free or lactose-reduced milk (unflavored, unsweetened). These products contain the same key nutrients, but they have the lactase enzyme added to them which helps break down lactose and makes it easier to digest. Lactose-free milk does tend to be more expensive. Lactose-free or lactose-reduced versions of other dairy products, such as yogurt and hard cheeses, are also good options to help meet dairy recommendations.

Is organic milk better than conventional milk?

Both conventional milk and organic milk provide essential nutrients, including protein, calcium, phosphorous, vitamin A, vitamin B12, and vitamin D;⁷ however, some studies do demonstrate differences in micronutrient profiles, which can vary by farm location, soil content, and season.⁸ Organic milk does tend to be more expensive. The decision to consume organic or conventional milk is a personal choice that will differ for every family.

What about other types of mammal milk?

Goat milk has similar nutritional properties to cow's milk and may be more easily digestible for those with cow's milk sensitivities, but it is usually more expensive.⁹ Buffalo milk is denser in nutrients and calories than regular cow's milk, with higher protein, fat, and lactose content, but it is also usually more expensive.¹⁰ Always choose pasteurized milk. Raw milk from any animal carries a risk of contamination from bacteria that can leave children and immunocompromised adults at a higher risk of foodborne illness.



For information about plant-based milk alternatives for children who have a dairy allergy or choose not to consume dairy for personal or cultural/religious reason, visit [HealthyEatingResearch.org](https://www.healthyeatingresearch.org)

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Learn more about what experts recommend at [HealthyEatingResearch.org](https://www.healthyeatingresearch.org).

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