

Science Summary

Milk & Health



Overview

Milk is a delicious and nutritious beverage produced fresh in every U.S. state. Milk is made possible by dairy farmers committed to responsibly producing milk to nourish Americans while remaining mindful of natural resources. Different milks help meet different people's health, taste and cooking needs. The variety of milks available includes whole, reduced-fat (2% milk fat), low-fat (1% milk fat), fat-free and flavored options. For people

with lactose intolerance (LI), there are lactose-free varieties as well. Milk is a nutrient-rich and affordable source of thirteen essential nutrients like protein, calcium, phosphorus, potassium, zinc, iodine, selenium, magnesium and vitamins A, D, B12, riboflavin (B2) and pantothenic acid (B5) in the U.S. diet. The Dietary Guidelines for Americans (DGA) and the American Academy of Pediatrics (AAP) recommend consuming low-fat or fat-free dairy foods like milk every day as part of healthy dietary patterns to help Americans 2 years and older meet their nutrient needs.

Drinking milk helps Americans meet dairy food recommendations

Dairy foods like milk are foundational foods in healthy dietary patterns. Healthy dietary patterns, which include low-fat and fat-free dairy foods, are associated with a lower risk for cardiovascular disease, type 2 diabetes and obesity.¹ In adults, drinking milk has been linked to an 8 percent lower risk of high blood pressure and stroke.^{2,3} Consuming dairy foods like milk is also linked to improved bone health throughout childhood and into adulthood.⁴⁻⁹ For older adults, drinking milk and eating other dairy foods is associated with a lower risk of hip fracture in both men and women.^{7,9-13}

While cow's milk should not be given to infants before 12 months of age, the 2020 DGA recommends providing small amounts of cheese and yogurt as complementary foods to infants beginning around 6 months of age and depending on developmental readiness. For toddlers 12-23 months who no longer consume human milk, the 2020 DGA recommends 1½ to 2 servings of whole- and reduced-fat dairy foods (whole milk, reduced-fat cheese and reduced-fat plain yogurt) as part of the Healthy U.S.-Style Dietary Pattern.¹ The DGA recommends that children transition to low-fat and fat-free milk, cheese and yogurt at 2 years of age and consume 2 servings of dairy foods daily from 2-3 years. The DGA recommends 2½ daily servings of low-fat or fat-free dairy foods for children 4-8 years and 3 servings for those 9 years and older in the Healthy U.S.-Style Dietary Pattern.¹

Young children come the closest to meeting DGA recommendations. Toddlers 12-23 months consume 2½ servings of dairy foods per day, on average, most of which is milk.¹ Dairy consumption tends to fall below recommendations by the time children go to school, and this trend carries forward through adolescence and into adulthood.¹⁴ American adults 19 years and older typically consume only 1½ servings of dairy foods daily, about half of which is milk.¹⁵ Encouraging adults and children to add 1 more daily serving of dairy foods like milk to their dietary pattern is a practical way to help meet dairy recommendations.^{16,17}

Drinking milk helps Americans get the essential nutrients their bodies need

Milk makes important nutrient contributions to the U.S. diet.¹⁸⁻²⁰ Adults and children 2 years and older who meet dairy recommendations are less likely to be below recommendations for a number of essential nutrients including calcium, magnesium, phosphorus, protein, riboflavin, vitamin A, vitamin B12, vitamin D, selenium, potassium and choline.²¹

Milk is also the leading food source of three nutrients of public health concern (calcium, vitamin D, potassium) for children 2-18 years and is the leading food source of calcium and vitamin D for all Americans over the age of 2.¹⁵ Milk provides, on average, over 34 percent of the daily vitamin D intake, 19 percent of the daily calcium intake and 9 percent of the daily potassium intake of Americans 2 years and older.¹⁵ For school-age children and adults, adding 1 more serving of low-fat or fat-free dairy foods every day to their current dietary patterns would help meet nutrient needs.^{16,17}

Nutrients from milk are difficult to replace with most milk alternatives

Many alternative beverages to milk are available but often are not nutritionally equivalent to milk.²² Milk contains 8 grams of high-quality protein per 8-ounce cup serving, while almond, rice and coconut “milks” contain 1 or fewer grams of protein per serving, unless fortified.^{23*} Proteins from animal food sources like milk are complete and high-quality because they provide all amino acids. Proteins from plant sources vary in quality.²⁴ Although the DGA includes soy beverages and yogurt in the dairy group if they are fortified with calcium and vitamins A and D, these fortified soy alternatives are not commonly consumed by Americans and contribute very little nutrition to the average U.S. diet.¹⁵ Milk is also an affordable source of key nutrients like calcium and vitamin D.²⁵ Other beverages, like calcium-fortified orange juice, are not nutritionally equivalent to milk and are more expensive sources of calcium.²⁵ The DGA notes that alternative beverages, such as almond, rice, coconut and hemp “milks,” are also not nutritionally equivalent to milk and are therefore not included in the dairy group.¹

Drinking milk every day is a healthy habit for children to develop

Beverages make important contributions to children’s nutrition.^{14,18} As children get older, they tend to choose less nutritious beverages, like sugar-sweetened beverages (SSBs), instead of milk.¹⁴ The 2020 DGA recommends choosing water and unsweetened beverages like 100% fruit or vegetable juice or low-fat or fat-free milk or fortified soy beverages within healthy dietary patterns in place of SSBs like soda, fruit drinks, sports and energy drinks.¹ SSBs contribute 25 percent of added sugars in the diets of children 2-5 years¹⁸ and up to 50 percent of added sugars in the diets of adolescents.²⁶ Flavored milk contributes, on average, approximately 5-6 percent of added sugars¹⁸ to

* FDC IDs: Almond beverage: 174832; Rice beverage: 171942; Coconut beverage: 174116

the diets of children 2-11 years and only 2 percent of added sugars for adolescents.²⁶ Through the School Breakfast Program and the National School Lunch Program, schools can offer low-fat and fat-free plain and flavored milks.^{27,28} Children who eat school meals (breakfast or lunch) every day report consuming more servings of dairy foods and, subsequently, consume more calcium than children who do not regularly eat school meals.²⁹ School-aged children who drink flavored milk tend to have higher milk³⁰ and nutrient consumption (calcium and magnesium), but not necessarily higher added sugars intake, than children who drink only plain milk.³¹ Drinking milk is an important habit to develop in childhood and carry forward into adulthood.

What to know about lactose intolerance and milk allergy

Some people feel discomfort after drinking milk, which may be due to LI or possibly milk allergy (MA). Individuals who are sensitive to lactose (“lactose intolerant”) do not make enough lactase, an enzyme that breaks down lactose during digestion.^{32,33} People with LI may experience discomfort like bloating or gas after consuming some dairy products. LI is different from MA, which is an immune reaction to milk protein(s) that can manifest with several different symptoms.³⁴ While MA is most common among young children, children often “outgrow” MA by early adolescence.^{35,36} LI is less common among young children.³³ Dairy avoidance, whether due to MA, LI or other reasons, can lead to inadequate consumption of important nutrients.^{32,33} While both MA and LI should be diagnosed and treated by a doctor, people with MA should avoid dairy foods³⁵ and ensure their diet includes other sources of the essential nutrients contained in dairy foods. Management strategies, like selecting lactose-free milk, consuming dairy foods in smaller servings and eating dairy foods with other foods can help most people with LI continue to enjoy dairy.³³

Note: One serving refers to 1 cup-equivalent. For milk, 1 cup-equivalent equals 1 cup

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