CENTER FOR Science IN THE Public Interest

Myths and Facts About Dairy Fat

The health impact of saturated fat (including dairy fat) is a key concern among the nation's foremost health authorities. For anyone aged 2 and older, the *2020-2025 Dietary Guidelines for Americans* recommends getting less than 10 percent of daily calories from saturated fats and a healthy dietary pattern that includes "fat-free or low-fat milk, yogurt, and cheese."[1] Similarly, the American Heart Association, American College of Cardiology, and National Heart, Lung, and Blood Institute recommend a dietary pattern that limits saturated fat and includes low-fat dairy products.[2,3,4] Furthermore, the National Heart, Lung, and Blood Institute, the American Heart Association, the American Academy of Pediatrics, and the Academy of Nutrition and Dietetics all recommend that children aged 2 or older drink low-fat or fat-free milk.[5,6,7]

Claims about the benefits (or harmlessness) of whole (full-fat) milk on human health are *not* supported by solid science or the advice of health authorities. For example:

Myth: Some foods, like full-fat dairy, are high in saturated fat but are not linked to increased cardiovascular risk.

FACT: This claim is not endorsed by major health authorities and is largely based on observational studies, which typically track thousands of people for years to see who is diagnosed with an illness. However, evidence from randomized controlled trials—the strongest type of scientific evidence—shows that foods high in saturated fat (including full-fat dairy) *do* raise LDL ("bad") cholesterol,[8,9,10,11] a known cause of heart disease.[12,13] Furthermore, randomized controlled trials demonstrate that lowering saturated fat in one's diet reduces the risk of cardiovascular events (like heart attacks and stroke), according to the Cochrane Collaboration, which conducts rigorous, highly respected systematic reviews of scientific evidence.[14] While it is true these trials have not found that lowering saturated fat reduces the risk of dying during the course of the trials, this is not surprising, according to the Cochrane experts, because the trials lasted only 4 to 5 years.[15]

Myth: Children dislike the taste of low-fat milk.

FACT: This oft-made claim is not backed by evidence. In a 2016 randomized study, children aged 3 to 6 drank no less milk when given 1% fat milk rather than full-fat milk with lunch, and there was no significant difference in the percentage of children who preferred either type of milk—52% preferred the 1% fat milk, while 48% preferred full-fat milk.[16] When it comes to taste, it appears that flavors like chocolate matter more than fat content. In a blind taste test, 425 children aged 8 to 16 rated the taste of lactose-free milks on a scale of 0 to 100. 1% fat chocolate milk ranked highest (81 points), unflavored 1% (62) and unflavored 2% fat milk (61) were rated virtually identically, and unflavored fat-free milk was rated slightly lower (57). Unflavored soy milk ranked lowest (42), but chocolate soy milk scored a 63. (Whole milk, which is 3.25% fat, was not tested.)[17]

Myth: Whole milk or other full-fat dairy foods prevent obesity.

FACT: According to the Dietary Guidelines Advisory Committee, "insufficient evidence is available to draw a conclusion about the relationship between the type of milk (*i.e.*, milk fat content, flavor) and adiposity in children."[18] Some observational studies report a higher risk of obesity in children who drink lower-fat milk, but that link may be due to what scientists call "reverse causation." In other words, it's

not that low-fat milk causes weight gain, but that the parents of children who already have overweight or obesity may have switched them to lower-fat milk prior to the study. The preferred way to address this question is in a randomized controlled trial. In one of few such trials testing this claim in adults, researchers gave 45 college students 3½ servings a day of either whole milk and yogurt or low-fat milk and yogurt for 60 days. On average, the students on the full-fat dairy gained 2 pounds while the students on the low-fat dairy experienced no change in body weight.[19] Similarly, in a recent study partly funded by the dairy industry, scientists randomly assigned 72 adults to eat roughly 3 servings a day of low-fat dairy, 3 servings a day of full-fat dairy, or not much dairy at all. After 12 weeks, only the full-fat-dairy group had gained weight—an average of 2 pounds. According to the authors, the study provides "evidence that full-fat dairy foods increase adiposity to a larger extent than their low-fat counterparts."[20]

Myth: Full-fat dairy prevents diabetes.

FACT: This claim is largely based on studies that report a lower risk of type 2 diabetes in people who have higher levels of blood fats derived from dairy foods, not from associations between dairy consumption and type 2 diabetes risk. However, this type of study isn't definitive because something else about those people or their diets could explain the correlation. In contrast, studies that randomly assign people to consume full-fat or low-fat dairy find no improvements in indicators of diabetes risk.[21] In the dairy industry-funded study cited above, insulin sensitivity—an indicator of diabetes risk—got *worse* for those on the low-fat and full-fat dairy diets but not for those on the diet with limited dairy.[22]

Myth: People dislike low-fat milk, so if that is the only type of milk available to them, they tend to drink less milk, raising their risk for developing osteoporosis and osteopenia at earlier ages.

FACT: This string of poorly justified assertions is difficult to prove or disprove given the available evidence. It is true that Americans drink less milk now than they did 50 years ago, but no one has ever convincingly linked that change to osteoporosis rates. Moreover, they now eat more yogurt and far more cheese than in the past. In fact, children aged 2 to 19 *increased* their intake of calcium—a key nutrient for bone health—from 875 to 1,060 milligrams per day between 1999 and 2016.[23] Similarly, adults increased their intake of calcium from 783 to 941 milligrams per day between 1999 and 2012.[24] If anything, these increases in calcium intake suggest that today's Americans are *less* likely to develop osteoporosis or osteopenia at earlier ages.

Myth: We need whole milk to absorb the fat-soluble vitamins (A, D, E, and K) found in dairy.

FACT: Exactly how much dietary fat—or how little—is needed to maximize the absorption of the fat-soluble vitamins A and D is unclear.[25,26] (Milk has insignificant levels of vitamins E or K.) Though few studies have been done, one small study found that people absorbed as much vitamin A from fat-free milk as from full-fat milk when they were consumed with cookies containing a small amount of fat (6 grams).[27] In another small study, vitamin D blood levels were similar after adults drank full-fat milk or fat-free milk.[28] In any case, individuals are likely to get sufficient fat from other foods in their diets to aid in the absorption of the vitamins A and D found in fat-free or low-fat milk. Moreover, individuals generally do not meet their vitamin D needs through food alone—sunlight and supplements are key contributors along with fortified foods like milk.

For more information, please contact the Center for Science in the Public Interest at policy@cspinet.org.

[1]U.S. Department of Agriculture and U.S. Department of Health and Human Services. *Dietary Guidelines for Americans, 2020-2025.* 9th Edition. December 2020. Available at DietaryGuidelines.gov.
[2] Van Horn L, et al. Recommended Dietary Pattern to Achieve Adherence to the American Heart Association/American College of Cardiology (AHA/ACC) Guidelines: A Scientific Statement From the American Heart Association. *Circulation.* 2016;134:e505-e529.
[3] Lichtenstein AH, et al. 2021 Dietary Guidance to Improve Cardiovascular Health: A Scientific Statement From the American Heart Association. *Circulation*. 2021;144
[4] National Heart, Lung, and Blood Institute. Heart-Healthy Living. https://www.nhlbi.nih.gov/health-topics/heart-healthy-living
[5] National Heart, Lung, and Blood Institute. Expert Panel on Integrated Guidelines for Cardiovascular Health and Risk Reduction in Children and Adolescents. NIH Publication No. 12-7486A. Bethesda, MD: National Institutes of Health; 2012.
[6] Steinberger J, et al. Cardiovascular Health Promotion in Children: Challenges and Opportunities for 2020 and Beyond: A Scientific Statement from the American Heart Association. Circulation. 2016 Sep 20;134(12):e236-55.
[7] Lott M, Callahan E, Welker Duffy E, Story M, Daniels S. Healthy Beverage Consumption in Early Childhood: Recommendations from Key National Health and Nutrition Organizations. Technical Scientific Report. Durham, NC: Healthy Eating Research, 2019.
[8] Bergeron N, et al. Effects of Red Meat, White Meat, and Nonmeat Protein Sources on Atherogenic Lipoprotein Measures in the Context of Low Compared with High Saturated Fat Intake: A Randomized Controlled Trial. *Am J Clin Nutr*. 2019;110(1):24-33.
[9] Chiu S, Williams PT, Krauss RM. Effects of a Very High Saturated Fat Diet on LDL Particles in Adults with Atherogenic Dyslipidemia: a Randomized Controlled Trial. *PLoS One*. 2017;12(2):e0170664.
[10] Mangravite LM, et al. Changes in Atherogenic Dyslipidemia Induced by Carbohydrate Restriction in Men Are Dependent on Dietary Protein Source. *J Nutr.* 2011;141(12):2180-5.
[11] Brassard D, et al. Comparison of the Impact of SFAs from Cheese and Butter on Cardiometabolic Risk Factors: A Randomized Controlled Trial. *Am J Clin Nutr.* 2017;105(4): 800-9.
[12] Sacks FM, et al. Dietary Fats and Cardiovascular Disease: A Presidential Advisory from the American Heart Association. *Circulation*. 2017;136(3):e1-e23.
[13] Another myth about dairy fat perpetuated by those opposed to any attempt to limit its consumption is that trials using LDL-cholesterol (LDL-C) levels as the sole indicator of heart disease risk are inherently flawed. However, this is not true, since there is a robust body of evidence showing that LDL-C is not a surrogate of heart disease risk, but a direct cause of it. For example, an expert panel of the National Lipid Association concluded that elevated LDL-C is a "root cause of atherosclerosis," the plaque buildup in the walls of arteries that leads to heart attacks, strokes, and other cardiovascular disease. Similarly, an American Heart Association advisory on dietary fats explains that wide-ranging evidence demonstrates that lowering LDL-C reduces the risk of atherosclerosis and cardiovascular disease. Furthermore, lowering LDL-C with drugs and/or lifestyle is a prime target of clinical practices guidelines issued by the American Heart Association, American College of Cardiology, and other professional associations. Sacks, 2017; Jacobson TA, et al. National Lipid Association Recommendations for Patient-Centered Management of Dyslipidemia: Part 1—Full Report. *J Clin Lipidol.* 2015;9(2):129-69; Grundy SM, et al. 2018 AHA/ACC/AACVPR/AAPA/ABC/ACPM/ADA/AGS/APhA/ASPC/NLA/PCNA Guideline on the Management of Blood Cholesterol: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. *Circulation*. 2019;139(25):e1082-e1143; Eckel RH, et al. 2013 AHA/ACC Guideline on Lifestyle Management to Reduce Cardiovascular Risk: A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. *J Am Coll Cardiol.* 2014;63(25 Pt B):2960-84.
[14] Hooper L, et al. Reduction in Saturated Fat Intake for Cardiovascular Disease. *Cochrane Database Syst Rev*. 2020;(5):CD011737.
[15] Hooper L, Martin N, Abdelhamid A. Cochrane Corner: What Are the Effects of Reducing Saturated Fat Intake on Cardiovascular Disease and Mortality? *Heart*. 2015;101(24):1938-40.
[16] Kling SM, Roe LS, Sanchez CE, Rolls BJ. Does milk matter: Is children's intake affected by the type or amount of milk served at a meal? Appetite. 2016 Oct 1;105:509-18.
[17] Palacios OM, Badran J, Spence L, Drake MA, Reisner M, Moskowitz HR. Measuring acceptance of milk and milk substitutes among younger and older children. J Food Sci. 2010 Nov-Dec;75(9):S522-6. Note: The study was co-authored by two National Dairy Council employees and one former employee.
[18] The Committee did not make a comparable conclusion regarding adults. Dietary Guidelines Advisory Committee. Part D, Chapter 10: Beverages. *Scientific Report of the 2020 Dietary Guidelines Advisory Committee: Advisory Report to the Secretary of Agriculture and the Secretary of Health and Human Services.* U.S. Department of Agriculture, Agricultural Research Service. 2020.
[19] Alonso A, et al. The effect of low-fat versus whole-fat dairy product intake on blood pressure and weight in young normotensive adults. *J Hum Nutr Dietetics.* 2009;22:336-342.
[20] Schmidt KA, Cromer G, Burhans MS, Kuzma JN, Hagman DK, Fernando I, Murray M, Utzschneider KM, Holte S, Kraft J, Kratz M. The impact of diets rich in low-fat or full-fat dairy on glucose tolerance and its determinants: a randomized controlled trial. Am J Clin Nutr. 2021 Mar 11;113(3):534-547. doi: 10.1093/ajcn/nqaa301.

[21] Chiu S, Williams PT, Dawson T, Bergman RN, Stefanovski D, Watkins SM, Krauss RM. Diets high in protein or saturated fat do not affect insulin sensitivity or plasma concentrations of lipids and lipoproteins in overweight and obese adults. J Nutr. 2014 Nov;144(11):1753-9. doi: 10.3945/jn.114.197624.
[22] Schmidt, 2021.
[23] Liu J, Rehm CD, Onopa J, Mozaffarian D. Trends in Diet Quality Among Youth in the United States, 1999-2016. JAMA. 2020 Mar 24;323(12):1161-74.
[24] Rehm CD, et al. Dietary Intake Among US Adults, 1999-2012. *JAMA*. 2016;315(23):2542-2553.
[25] Institute of Medicine. 2001. Dietary Reference Intakes for Vitamin A, Vitamin K, Arsenic, Boron, Chromium, Copper, Iodine, Iron, Manganese, Molybdenum, Nickel, Silicon, Vanadium, and Zinc. Washington, DC: The National Academies Press. https://doi.org/10.17226/10026.
[26] Institute of Medicine. 2011. Dietary Reference Intakes for Calcium and Vitamin D. Washington, DC: The National Academies Press. https://doi.org/10.17226/13050.
[27] Herrero-Barbudo C, et al. Bioavailability of vitamins A and E from whole and vitamin-fortified milks in control subjects. *Eur J Nutr*. 2006;45:391-398.
[28] Tangpricha V, et al. Fortification of orange juice with vitamin D: a novel approach for enhancing vitamin D nutritional health. *Am J Clin Nutr.* 2003;77:1478-83. Note: this study was supported in part by the Coco-Cola Company.