

Science Summary

Dairy and Blood Pressure



Overview

Dairy foods such as milk, cheese and yogurt are foundational foods in healthy dietary patterns. Low-fat and fat-free dairy foods are part of the Dietary Guidelines for Americans (DGA) and American Heart Association (AHA) recommended healthy dietary patterns for Americans 2 years and older. A growing body of evidence indicates that consuming dairy foods is linked with reduced risk for high blood pressure and may help maintain or lower elevated blood pressure. This summary provides an overview of the research published since 2015 on the link between consuming dairy foods and blood pressure.

Healthy dietary patterns can help lower risk for high blood pressure and decrease healthcare costs

High blood pressure is a major risk factor for cardiovascular disease (CVD).¹ Over 45 percent of American adults have high blood pressure, and between 2014–2015, total healthcare costs and lost productivity associated with high blood pressure was \$55.9 billion.¹ Lifestyle guidelines for prevention of cardiovascular risk factors, including high blood pressure, emphasize weight control, physical activity, smoking avoidance, limited alcohol consumption and healthy dietary patterns.¹ The Dietary Approaches to Stop Hypertension (DASH) diet, a reduced-fat diet containing up to three servings of low-fat dairy foods and 8 to 10 servings of fruits and vegetables, lowers elevated blood pressure.^{2,3} The 2020 DGA describes the DASH diet as a “healthy dietary pattern.”⁴ The AHA recommends the DASH diet to reduce elevated blood pressure.⁵ It also recommends including low-fat and fat-free dairy foods in healthy dietary patterns to reduce elevated blood pressure and CVD risk.⁵

The 2020 DGA states that healthy eating is associated with lower blood pressure in adults, including older adults,⁴ and recommends 3 daily servings of low-fat or fat-free dairy foods for those 9 years and older, 2½ servings for children 4–8 years and 2 servings for children 2–3 years as part of the Healthy U.S.-Style Dietary Pattern.⁴ The DGA also recommends 1½ to 2 servings of whole- and reduced-fat dairy foods for toddlers 12–23 months who no longer consume human milk as part of the Healthy U.S.-Style Dietary Pattern.⁴ Small amounts of yogurt and cheese are recommended as complementary foods for infants 6 to 12 months, depending on developmental readiness.⁴

Eating dairy foods linked to lower blood pressure in systematic reviews and meta-analyses

Since 2015, 2 systematic reviews and meta-analyses, 5 prospective cohort studies and 9 trials have been published that contribute to the body of science on the links between dairy intake and healthy blood pressure in adults and adolescents. In 2016, a systematic review⁶ of prospective research on the links between dairy and cardiovascular

health, including blood pressure, found that high-quality evidence consistently indicates that total dairy food consumption is associated with a reduced risk of hypertension. This review also found that high-quality evidence indicates cheese consumption is not associated with the risk of hypertension, and moderate-quality evidence indicates that milk consumption may be associated with a reduced risk of hypertension. A 2017 systematic review and meta-analysis summarized the evidence on the relationship of the intakes of 12 major food groups, including dairy, with the risk of hypertension.⁷ This meta-analysis identified 9 prospective studies that assess the link between dairy foods and hypertension.⁷ In a dose-response analysis, increasing dairy intake by about 1 cup per day was associated with a 5 percent reduction in hypertension risk.⁷ Systematic reviews and meta-analyses published since 2015^{6,7} indicate that total dairy food as well as milk consumption is linked to lower risk of elevated blood pressure. Specific dairy foods like cheese are not linked with hypertension risk, though these findings need confirmation.

Prospective evidence indicates consuming dairy foods is linked with reduced risk for high blood pressure

Prospective cohort studies have also been used to assess the impact of dairy food intake on blood pressure. Like the systematic reviews and meta-analyses on the topic, evidence from prospective cohort studies consistently reports a beneficial relationship or no relationship between consuming dairy foods and blood pressure. In 37,124 Chinese adults assessed as part of the Singapore Chinese Health Study, daily milk drinkers had a lower risk of hypertension than nondrinkers did.⁸ Another prospective cohort study that evaluated dairy intake and blood pressure in nearly 180,000 Americans found that participants who consumed at least 3 servings of dairy per day (versus less than ½ serving per day) had a 13 percent lower risk of high blood pressure.⁹ In 57,547 adults from 21 countries, consuming at least 2 servings of dairy per day was linked with a lower incidence of high blood pressure.¹⁰ In a study of 40,526 French women, overall dairy consumption was not linked with high blood pressure, but risk of hypertension increased with processed cheese consumption.¹¹

Clinical trials find eating low-fat or whole-fat dairy foods helps maintain or lower elevated blood pressure

Clinical studies indicate that consuming recommended amounts of dairy foods does not increase blood pressure and, in some studies, especially studies conducted in adults at risk for elevated blood pressure, consuming dairy foods was linked to lower blood pressure. Results of 5 randomized clinical trials also indicate that consuming dairy foods has neutral or beneficial links with blood pressure in adults.¹²⁻¹⁶ In one large randomized intervention trial of the DASH diet, adults who both increased their dairy intake to more than 1½ servings per day and consumed more than 5 servings of fruits and vegetables per day had the greatest reductions in blood pressure.¹² A crossover trial with overweight adults found that a diet including up to 6 servings of dairy foods daily reduced both systolic and diastolic blood pressure compared to a diet with less than 1 daily serving of dairy foods.¹³ Rietsema et al. noted that this effect may have been due to the calcium content of the high dairy versus the low dairy diet.¹³ Similarly, a randomized crossover trial of 49 adults with hypertension found that adding 4 or more daily servings of fat-free dairy foods reduced systolic blood pressure and improved vascular function compared to a similar diet without dairy foods.¹⁴

Whole-fat dairy products have also been found to have neutral or beneficial impacts on blood pressure. In a study of 36 healthy adults, when a standard DASH diet was compared with a higher-fat DASH diet including whole milk dairy

foods, both the higher fat and standard DASH diets resulted in lowered blood pressure.¹⁵ In a crossover clinical trial, 60 participants who added 4 servings per day of whole-fat dairy products (milk, cheese, yogurt) to their normal diet had no significant changes in blood pressure compared to participants adding 4 servings per day of plant-based foods (coconut milk, peanuts, orange juice, applesauce).¹⁶

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