

# SCIENCE SUMMARY: Nutrient Contributions

Dairy foods make significant nutrient contributions to healthy eating patterns



## Overview

Dairy foods such as milk, cheese and yogurt are foundational foods in healthy eating patterns. Their nutrient contributions have been noted in all of the Dietary Guidelines for Americans (DGA) since the first one was released in 1980. Consumption of dairy foods help Americans meet recommendations for calcium, vitamin D and potassium, 3 of the 4 underconsumed nutrients of public health concern. Dairy foods also make important contributions to consumption of protein, magnesium, vitamin A and other nutrients in the U.S. diet. Most Americans are not consuming the recommended amounts of dairy foods, but even at current intakes, dairy foods supply more than half of the calcium and vitamin D in the U.S. diet. Meeting daily recommendations of dairy foods can help Americans close key nutrient gaps and contribute to overall healthy eating patterns.

## Low-fat or fat-free dairy foods are an important part of healthy eating patterns

The DGA recommends low-fat or fat-free dairy foods, such as milk, cheese and yogurt, as a part of healthy eating patterns that have been linked to health benefits, including lower risk for cardiovascular disease (CVD) and type 2 diabetes (T2D). Dairy consumption is linked to improved bone health, especially in children and adolescents.<sup>1</sup> The 2015 DGA recommends 3 daily servings of low-fat or fat-free dairy foods for those 9 years and older, 2½ for children 4-8 years and 2 for children 2-3 years in the Healthy U.S.-Style Eating Pattern.<sup>1</sup> An analysis of USDA Food Patterns indicated 3 daily servings of dairy foods contribute 59-73% of calcium, 57-67% of vitamin D, 15-25% of potassium, 22-31% of protein, 24-37% of vitamin A, 29-38% of vitamin B12, 32-46% of riboflavin (B2), 12-19% of magnesium and 17-26% of zinc but only 7-14% of total calories to U.S. diets.<sup>2</sup> If dairy foods are removed from USDA Food Patterns, several nutrients drop below 100% of goals, with shortfalls being greatest for calcium, vitamin D, potassium and choline.<sup>2</sup>

*When dairy group foods are removed from healthy eating patterns, calcium, magnesium, iron, vitamin A and riboflavin drop below 100% of dietary goals, and vitamin D, potassium and choline drop even lower.<sup>2</sup>*

## Dairy foods make important nutrient contributions to the U.S. diet

Milk is the leading food source of 9 essential nutrients including protein, calcium, phosphorus, magnesium, potassium, vitamins A, B12, D and riboflavin (B2) for American children ages 2-18.<sup>3</sup> For all Americans 2 years and older, milk is the number one food source of 3 of the 4 underconsumed nutrients of public health concern identified by the 2015 DGA: calcium, vitamin D and potassium.<sup>3,4</sup> Most Americans 2 years and older do not meet dairy food recommendations. Americans consume, on average, less than 2 cup equivalents of dairy foods daily (0.9 cup of milk, 1.2 ounces of cheese and 0.1 cup of yogurt).<sup>5</sup> Hispanics and non-Hispanic blacks consume fewer dairy foods daily than non-Hispanic whites (1.5, 1.2 and 1.9 servings per day, respectively).<sup>6</sup> Even at current consumption rates, on average, milk, cheese and yogurt contribute 54% of calcium, 56% of vitamin D, 14% of potassium, 18% of protein, 29% of vitamin A, 27% of vitamin B12, 25% of riboflavin (B2), 12% of magnesium

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and 17% of zinc to the U.S. diet, but only 11% of total calories.<sup>5</sup> Dairy foods also contribute 15% of total fat, 27% of saturated fat, and 3% of added sugars to diets of Americans 2 years and older.<sup>6</sup>

Adding just 1 daily serving of dairy foods to current consumption can help Americans meet dairy food recommendations and contribute to closing key nutrient gaps.<sup>7</sup> Diet modeling has shown that increasing current consumption to meet the recommended servings of dairy foods each day would result in most Americans meeting the Estimated Average Requirement (EAR) for calcium, magnesium and vitamin A.<sup>8</sup>

## Current beverage intakes support recommendations for children to drink milk

Drinking milk is an important habit to develop in childhood and carry forward into adulthood. As children get older, their consumption of dairy foods does not increase to meet age-specific recommendations, thereby creating a dairy gap that continues into adulthood.<sup>5,9</sup> The DGA recommends drinking milk with meals among strategies to increase dairy consumption.<sup>1</sup> The DGA further recommends low-fat or fat-free milk, 100% juice or water as primary beverages to consume and as alternatives to sugar-sweetened beverages.

Among milk-drinking children, milk contributes 62-66% of vitamin D, 37-41% of calcium, 22-27% of potassium and 11-12% of calories. White milk contributes no added sugars, and flavored milk contributes, on average, only 4% of added sugars to the diets of children 2-18 years.<sup>10</sup> For children who drink fruit drinks and soda, those beverages supply 28-36% and 39-46% of added sugars, respectively, and 7-9% of calories.<sup>11</sup> A study of children found that consumption of soda at 5 years was associated with consumption of more soda and more added sugars, but less milk and less protein, fiber, vitamin D, calcium, magnesium, phosphorus and potassium from 5-15 years.<sup>12</sup>

*Replacing dairy foods with other foods to meet nutrient recommendations in a healthy eating pattern can require a significant change in dietary behaviors,<sup>13</sup> and dairy foods are often more affordable.<sup>14</sup>*

## Nutrients in dairy foods can be difficult to replace with other foods

Replacing dairy foods with non-dairy, calcium-equivalent foods can have unintended nutritional consequences. Non-dairy beverages that contain similar amounts of calcium per cup as milk, such as calcium-fortified almond or rice beverage, can be lower in potassium and protein compared to milk and contain more calories than fat-free milk.<sup>2</sup> Many milk alternatives contain 1 or fewer grams of protein per cup, compared to 8 grams in cow's milk and fortified soy beverage.<sup>2</sup>

Substituting milk, cheese and yogurt with other food sources of calcium can change the overall nutrient profile of the diet because the replacement foods may not be meaningful sources of dairy's other nutrients.<sup>13</sup> The amount of alternative foods necessary to provide the same amount of calcium in 3 servings of dairy foods may provide too many calories and/or be too large an amount to consume daily.<sup>2</sup> A modeling study found that it would take 1.1 servings of fortified soy beverage, 0.6 servings of fortified orange juice, 1.2 servings of bony fish, or 2.2 servings of leafy greens to replace the calcium in 1 cup of milk in a healthy eating pattern.<sup>13</sup> Because dairy foods are the lowest cost source of dietary calcium and among the lowest cost sources of riboflavin (B2) and vitamin B12 in the U.S. diet, they are a good value, too.<sup>14</sup>

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