Dairy: The Ultimate Calcium Source

Milk and other dairy foods are recognized as among the best sources of naturally occurring calcium. Milk and other dairy foods provide 72% of the calcium available in the U.S. food supply making them the major source of calcium in the U.S.[1]

Why naturally nutrient-rich milk and milk products are the best, most reliable sources of calcium:

- Milk, cheese, and yogurt together provide nine essential nutrients, including calcium, potassium, phosphorus, protein, vitamins A, D, B12, riboflavin and niacin (niacin equivalents).
- Plenty of foods contain calcium, but few other foods provide such a concentrated source of calcium that is readily available for absorption.
- Non-dairy foods contain smaller amounts of calcium in addition to substances, such as phytates and oxalates, that limit calcium absorption.
- While calcium-fortified foods are important for those who cannot meet their recommended calcium intake with dairy foods, they vary in calcium content, bioavailability, and quality.
- Calcium supplements can assist individuals with a low calcium intake to meet their calcium requirements, though they supply only calcium and are not a substitute for choosing a healthy diet.

Food is the first priority in meeting calcium needs, according to many health professional organizations and medical experts:

- The Dietary Guidelines Advisory Committee Report states, "The more scientists learn about nutrition and the human body, the more they realize the importance of eating whole foods."[2]
- The American Dietetic Association, in a position statement, states that "the best nutritional strategy for promoting optimal health and reducing the risk of chronic disease is to wisely choose a wide variety of foods".[3]
- The National Institutes of Health (NIH) Consensus Panel on Osteoporosis Prevention, Diagnosis, and Therapy states that the preferred source of calcium is calcium-rich foods, such as dairy foods.[4]
- Likewise, the NIH Expert Panel on Optimal Calcium Intake[5] and the American Medical Association[6] recommend that calcium be obtained primarily from natural foods, particularly dairy products.

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[1] Gerrior SL, et al. Nutrient Content of the U.S. Food Supply, 1909-2000. Home Economics Research Report No. 56. U.S. Department of Agriculture, Center for Nutrition Policy and Promotion. November 2004.
[2] 2005 Dietary Guidelines Advisory Committee Report. http://www.health.gov/dietaryguidelines/dga2005/report/
[3] The American Dietetic Association. *J. Am. Diet. Assoc.* 101: 115, 2001.
[4] NIH Consensus Development Panel, Osteoporosis Prevention, Diagnosis and Therapy. *JAMA*. 285(6): 785, 2001.
[5] Optimal Calcium Intake. NIH Consensus Statement online, 1994 June 6-8; 12(4): 1-31.
[6] American Medical Association, Council on Scientific Affairs. *Arch. Fam. Med*. 6: 495, 1997.

Calcium absorption from food

Two fiber constituents, phytate and oxalate, can reduce the availability of calcium contained in the same food. The lower absorption of calcium from beans (pinto, red, white), compared to milk, is explained by beans' content of phytate. Similarly oxalate, found in spinach, inhibits the absorption of calcium from this food. Only about 5% of the calcium in spinach is absorbed, compared to the absorption of calcium from milk, which is about 30%.

One would need to consume 5 cups of red beans, 2 ¼ cups of broccoli, or 8 cups of spinach to obtain the same amount of *absorbable* calcium as in one cup of milk. See the chart below for other examples:

Comparison of Food Sources of Absorbable Calcium

Food	Calcium Content	% Fractional Absorption	Servings to Equal 1 cup Milk
Milk (1 cup)	300 mg	32.1	1.0
Cheddar Cheese (1 ½ oz.)	303 mg	32.1	1.0
Yogurt (1 cup)	300 mg	32.1	1.0
Pinto Beans (1/2 cup)	44.7mg	26.7	8.1
Red beans (1/2 cup)	40.5 mg	24.4	9.7
White beans (1/2 cup)	113 mg	21.8	3.9
Broccoli (1/2 cup)	35 mg	61.3	4.5
Spinach (1/2 cup)	115 mg	5.1	16.3
Kale (1/2 cup)	61 mg	49.3	3.2
Bok Choy (1/2 cup)	79 mg	53.8	2.3
Sweet potato (1/2 cup)	44 mg	22.2	9.8
Rhubarb (1/2 cup)	174 mg	8.54	9.5
Green cabbage (1/2 cup)	25 mg	64.9	5.9

Sources:
Weaver CM, Proulx WR and Heaney RP, Choices for achieving adequate calcium with a vegetarian diet. *American Journal Clinical Nutrition,* 1999; 70(suppl): 543S-548S.
Weaver CM and Plawecki KL, Dietary calcium: adequacy of a vegetarian diet. *Am J Clin Nutr,* 1994; 59(suppl): 1238S-1241S.

Calcium-fortified foods

Calcium-fortified foods may help close the gap between calcium recommendations and intake. However, they vary in calcium content, calcium bioavailability, and quality – and are not the nutritional equivalent of milk and milk products. An analysis of the physical properties of the calcium fortification systems in 10 orange juice, 3 soy and 1 rice beverage brands revealed that the state of calcium fortification in various beverages is at best quite uneven – and would likely result in less calcium delivery into the body than the calcium content on the beverage label would suggest.[7] Milk was found to be a more reliable calcium source than most of the orange juice brands tested, and all four popular brands of soy and rice beverages.

When looking for a calcium-rich beverage, milk is the most reliable choice. Milk always contains a standard amount of 300 mg of calcium per cup in a form that is easily absorbable.

[7] Heaney RP et al. Not all calcium-fortified beverages are equal. *Nutrition Today.* 2005; 40(1):39-44.