

## Dairy Foods and Bone Health

### *The Connection Continues to Strengthen*

#### What role do dairy foods play in bone health?

Dairy foods are an excellent source of several essential nutrients that work together to help protect bones, including calcium, magnesium, phosphorus, potassium, protein and vitamin D. By enjoying three servings of low-fat or fat-free milk, yogurt or cheese every day as part of an overall healthy diet, families, especially children and adolescents in their peak bone-building years, can help reduce the risk of osteoporosis later in life.

#### Do Americans get enough dairy foods?

No. On average, Americans are eating only about half (1.5 servings) of the dairy servings that they should consume daily.

Only one out of five Americans meets the 2005 Dietary Guidelines recommendation for consuming three daily servings of dairy foods.<sup>1</sup> Together milk, cheese and yogurt provide a unique nutrient package of nine essential nutrients that help Americans nourish their bones and improve overall diet quality.

#### Number of milk group servings consumed per day compared to recommended amount<sup>1</sup>

| <u>Gender and Age (years)</u> | <u>Total Dairy* (servings/day)</u> | <u>Dietary Guidelines Dairy Recommendations (cups/day)</u> |
|-------------------------------|------------------------------------|--|
| All                           | 1.5                                | 3  |
| Males                         | 2                                  | 3  |
| Females                       | 1.5                                | 3  |
| Age Groups                    |                                    |  |
| 2-3 years                     | 2                                  | 2  |
| 4-8 years                     | 2                                  | 2  |
| 9-19 years                    | 2                                  | 3  |
| 20-50 years                   | 1.5                                | 3  |
| 51+ years                     | 1                                  | 3  |
| 2-19 years                    | 2                                  | 2 or 3   |
| 20+ years                     | 1.5                                | 3  |

\*Total Dairy equals servings of milk, cheese and yogurt.

#### Have recent studies reinforced the existing body of science showing a strong connection between dairy and bone health?

A substantial amount of studies continue to support dairy's vital role in promoting bone health. Women are at an increased risk for osteoporosis, as 80 percent of those affected by the disease are women.<sup>2</sup> Yet, close to nine out of 10 women (88%) ages 19 and up, fail to meet calcium recommendations.<sup>3</sup>

Researchers at Washington University School of Medicine found that consuming calcium primarily from dietary sources rather than supplements affects estrogen metabolism and positively impacts bone mineral density in postmenopausal women.<sup>4</sup> Another study from Oxford found that women who have low dietary calcium intakes have an increased risk of bone fractures.<sup>5</sup> This research suggests that those at risk for bone loss should be encouraged to consume calcium-rich foods.

A recent study in *Pediatrics*<sup>6</sup> on perceived milk intolerance and bone mineral content in young girls (ages 10-13) found that adolescent girls who thought they were milk intolerant consumed less calcium and had

lower bone mineral content in the spine than girls who did not think they were milk intolerant. The long-term consequences of reduced calcium intake and lower spine bone mineral content may put them at an increased risk for osteoporosis later in life.<sup>7</sup>

Research shows dairy foods, when consumed as part of a healthy diet, improve overall diet quality<sup>8</sup> and may help to reduce the risk of osteoporosis.<sup>8, 9, 10</sup>

**What are the recommendations from bone health experts?**

The 2005 Dietary Guidelines for Americans (DGA)<sup>8</sup> recognized that people who consume more dairy foods have better overall diets, tend to consume more nutrients and have improved bone health. The DGAs note that diets rich in milk and milk products can reduce the risk of low bone mass throughout the lifecycle. Regularly consuming milk products is especially important for children and adolescents who are building their peak bone mass and creating life-long habits.

In 2004, the U.S. Surgeon General called for all Americans to take action to improve and maintain healthy bones. He urged people of all ages to meet daily requirements for calcium and vitamin D with three glasses of low-fat milk each day.<sup>9</sup>

An American Academy of Pediatrics (AAP) report<sup>7</sup> recommends children and adolescents drink three to four 8 oz glasses of milk per day (or the equivalent) to achieve the recommended adequate calcium and vitamin D intake. The AAP suggests getting calcium from dairy foods first such as milk, flavored milk, cheese and yogurt, with an emphasis on low-fat or fat-free varieties to help build strong bones and reduce the risk of fractures and osteoporosis later in life. The report also stresses the importance of parental role modeling, physical activity and the call for pediatricians to regularly assess their patients' calcium intake.

The best way to get the calcium you need is by eating and drinking foods that are calcium-rich. Milk and many other dairy foods are excellent sources of calcium; they offer a highly absorbable source of calcium per serving. Dark green, leafy vegetables also contain calcium, though it is not as readily absorbed as calcium from dairy foods. In a recent study, researchers found that women who got their calcium from food had healthier bones and higher bone densities than women whose calcium came mainly from supplemental tablets.<sup>4</sup> In the American food supply, most of the calcium from food (72%) comes from milk and milk products.<sup>11</sup>

**Nutrient comparison of cow's milk, almond, rice and soy beverage**<sup>12,13,14</sup>

|                        | Daily Value | Cow's Milk, Fat-free | Almond Beverage | Rice Beverage | Soy Beverage, Calcium-fortified |
|------------------------|-------------|----------------------|-----------------|---------------|---------------------------------|
| Serving Size           |             | 8 fl oz              | 8 fl oz         | 8 fl oz       | 8 fl oz                         |
| Calories               | 2000        | 83                   | 57              | 120           | 98                              |
| Calcium (mg)           | 1000        | 306                  | 198*            | 300*          | 368                             |
| Potassium (mg)         | 3500        | 382                  | 179*            | 69*           | 225*                            |
| Phosphorus (mg)        | 1000        | 247                  | 114*            | 150*          | 225                             |
| Vitamin A (IU)         | 5000        | 500                  | 500             | 500           | 1098                            |
| Vitamin D (IU)         | 400         | 100                  | 100             | 100           | 122                             |
| Vitamin B12 (mg)       | 6           | 1.3                  | N/A             | 1.5           | 2.99                            |
| Riboflavin (mg)        | 1.7         | 0.4                  | N/A             | 0.012*        | 0.53                            |
| Niacin (mg)            | 20          | 0.23                 | N/A             | 1.91          | 0.94                            |
| Vitamin C (mg)         | 60          | 0                    | 0               | 1.2           | 0                               |
| Iron (mg)              | 18          | 0.07                 | 0.4             | 0.72          | 1.6                             |
| Protein (g)            | 50          | 8.26                 | 1.10*           | 1*            | 4.58*                           |
| Total Carbohydrate (g) | 300         | 12.2                 | 7.6             | 23            | 11.2                            |
| Total Fat (g)          | 65          | 0.2                  | 2.6*            | 2*            | 4*                              |

\* Indicates nutrient value to which cow's milk is superior.

Sources:

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12. USDA National Nutrient Database for Standard Reference, Release 20: <http://www.ars.usda.gov/nutrientdata>.
13. Almond Breeze: <http://www.bluediamond.com/retail/breeze/index.cfm>.
14. Rice Dream: <http://www.tastethedream.com/index.php>.

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