

## **SECTION 3**

### **Discovering Dairy Alternatives**

Most North Americans and Europeans grow up with the idea that milk is a healthful beverage, and the dairy industry has certainly done its best to promote that idea. However, researchers seeking to understand why people following Western diets tend to have high cancer rates have begun to point a finger of blame not only at meat and other fatty foods, but also at dairy products.

In 1998, Harvard researchers reported findings in a large group of health professionals. Those who typically had more than two servings of milk per day had a 60 percent increased risk of prostate cancer, compared to those who generally avoided milk.<sup>1</sup> Two years later, another Harvard study on a separate large group of men showed much the same thing—milk-drinkers had significantly more prostate cancer.<sup>2</sup> Many other studies have had similar findings, and researchers have also examined the role of dairy products—positive or negative—in other forms of cancer.

What is all this about? Why should dairy products influence cancer risk? Is the problem due to hormones or other chemicals in milk, or is it due to the basic nutrient makeup of milk—its fat or protein, perhaps? What does this mean for people who have been diagnosed with cancer already? And if milk does have health risks, what do we replace it with?

#### **Milk Promotes Growth of Infants—and Cancer Cells**

To understand why dairy products might play a role in cancer, it helps to remember its biological purpose, so to speak. Milk is produced by mothers to support the rapid growth of their newborns. It contains plenty of protein, fat, and sugar (lactose), as well as dozens of hormones and other natural chemical substances that direct infants' growth and development. Milk differs from species to species—cow's milk is quite different in its nutrient profile from human milk—but all mammals' milk is designed to encourage rapid growth.

After the age of weaning, of course, all mammals stop drinking their mothers' milk. A few thousand years ago, however, humans began to consume milk taken from cows and a few other mammals. Until relatively recently (in the historical

sense), this curious practice was limited to northern Europe and a few other places.

When humans drink cow's milk, it causes some worrisome biological changes in the body, one of which is a rise in the amount of *insulin-like growth factor I* (IGF-I) in the bloodstream.<sup>3,4</sup> IGF-I is a powerful stimulus for cancer cell growth. When breast cancer cells are mixed with IGF-I in a test tube, for example, they grow rapidly.

Researchers have known for many years that men and women with higher levels of IGF-I in their blood are at significantly higher risk for prostate and premenopausal breast cancer, respectively, compared to those with lower levels.<sup>5,6</sup> So one way that milk may influence cancer risk is by increasing the amount of IGF-I in the blood. Individuals who have been diagnosed with cancer may be quite right to be concerned that milk drinking boosts IGF-I levels in their bloodstreams, given that IGF-I, in turn, can encourage cancer cell growth.

Milk causes other chemical changes in the body as well, some of which relate to specific types of cancer. Generally speaking, these mechanisms relate not only to the likelihood that cancer will strike, but also to how rapidly it will grow and spread once it has occurred.

## **Prostate Cancer**

As we've seen, large studies have shown that milk-drinking men have a higher risk of prostate cancer. However, milk's ability to boost IGF-I is not the only mechanism by which this occurs. Milk fat, like the other fats you read about in Section 1, may also increase the body's production of testosterone, which is linked to prostate cancer risk.

In addition, milk appears to interfere with the activation of vitamin D in the body. Vitamin D is actually a hormone that helps your body absorb calcium from the digestive tract. It also protects the prostate against cancer. It is normally produced by sunlight's action on the skin, and it can also come from the diet. However, these forms of the vitamin are inactive precursors. In order to function as full-fledged vitamin D, they must pass first to the liver and then to the kidneys for slight changes to their molecular structure.

And this is where dairy products become a problem. As the load of calcium in dairy products floods into the bloodstream, it apparently signals the body that, since there is plenty of calcium in the system already, the body does not need to activate vitamin D to try to absorb any more. That is, the body reduces its vitamin

D activation so that it does not absorb *too much* calcium, since calcium overdoses can be toxic.

The result of all this is that high-calcium foods can cause a substantial drop in the amount of activated vitamin D in the blood. And, since vitamin D is essential for maintaining a healthy prostate, less vitamin D in the blood may mean that the risk of prostate cancer climbs. Indeed, researchers have found that less vitamin D in the blood is indeed associated with higher cancer risk. Of course, milk often contains some added vitamin D, but it is in the inactive precursor form, and dairy consumption actually suppresses vitamin D activation in the body.<sup>1</sup>

At least 16 research reports in diverse populations, including the Harvard studies mentioned above, have linked milk drinking to prostate cancer.

## **Other Cancers**

Researchers at Harvard University and elsewhere have studied the links between milk consumption and ovarian cancer, with mixed results. The hypotheses under scrutiny have related not only to milk's fat content, but also to its sugar, *lactose*.

Lactose is actually made of two smaller sugar molecules, called *galactose* and *glucose*. When these two sugars are split apart—either by the bacteria used to produce yogurt or by digestive enzymes in your intestinal tract—galactose and glucose enter the blood. And galactose may be the problem. In large concentrations, galactose may be toxic to the ovaries, encouraging infertility and possibly cancer.

With regard to breast cancer, women with higher levels of IGF-I in their blood have a greater risk of premenopausal breast cancer. The Harvard Nurses' Health Study found that women with higher IGF-I levels had more than double the risk, compared to women with lower IGF-I levels.<sup>6</sup> Other researchers have made similar findings.<sup>7</sup> As we've seen, milk-drinking raises IGF-I levels.

Other studies seeking to nail down the links between dairy consumption and breast cancer risk have yielded mixed results, with some finding higher risk of breast cancer among milk-drinkers and others finding no such association.

Foods that are high in calcium appear to reduce colon cancer risk. However, people seeking ways to use calcium-rich foods to reduce colon cancer risk would do well to get their calcium from green leafy vegetables and beans rather than from dairy products. Prostate and breast cancer are much more common than colon cancer. Using dairy products to try to reduce colon cancer risk may increase the risk of other, much more common cancers.

## Healthier Beverages

There is no shortage of better beverages. Soymilk, rice milk, almond milk, and oat milk come in a wide variety of flavors and work very well on cereal or for drinking. They are available in calcium-fortified and regular versions, and many have vitamin fortification. Because many varieties require no refrigeration until opened, groceries sometimes stock them on the regular shelves rather than in the refrigerated section.

## The Healthiest Calcium Sources

Green leafy vegetables and legumes (beans, peas, and lentils) contain calcium, and, unlike milk, are rich in fiber and other nutrients that protect against cancer. You'll also find plenty of calcium in supplements and, as we've seen, in fortified soymilk. Calcium-fortified juices are now widely available. However, it is important to remember that increased calcium intake may be one of the reasons why milk is linked to prostate cancer (because high calcium intakes interfere with vitamin D activation). If that is true, you should be equally cautious about *any* product that is extremely high in calcium (i.e., fortified foods or supplements). In that light, green leafy vegetables and beans are your best calcium sources. They have adequate calcium, but not excessive amounts.

However, don't depend on calcium—from any source—to protect you from osteoporosis. While the dairy industry has pushed drinking milk as a means of preventing the bone-thinning condition, studies show that the strategy is largely useless.

Researchers at Pennsylvania State University found that, in girls in their peak bone-building years—ages 12 to 18—getting extra calcium made no difference at all in bone growth.<sup>8</sup> Exercise worked very well to foster bone growth, but extra calcium did not. Similarly, in the Nurses' Health Study, a group of nearly 78,000 women followed for 12 years showed that dairy calcium didn't help bone strength at all. Women who got the most calcium from dairy sources actually had nearly double the hip fracture rates, compared to those who got little or no dairy calcium.<sup>9</sup>

So how do you protect your bones? Here are the most important factors to remember:

- Exercise, of course, is the first key. Your bones need a reason to live, so to speak—and exercise strengthens them noticeably.
- Vitamin D—from sunlight or vitamin supplements—helps keep bones strong.
- Fruits and vegetables provide vitamin C to build collagen, which forms the basic network of tissue within your bones.

Perhaps most important of all, you should understand that osteoporosis is not a condition of inadequate calcium intake, for the most part. Rather, *it is a condition of overly rapid calcium loss*. Three factors, in particular, accelerate calcium losses, and controlling them gives you important power against osteoporosis:

- Sodium (salt) accelerates the passage of calcium through the kidneys into the urine. To reduce sodium intake, avoid adding salt in cooking or at the table, and be careful about canned foods and snack products made with added sodium.
- Animal protein is high in *sulfur-containing amino acids*, which tend to leach calcium from the bones and send it through the kidneys into the urine.
- Smokers have rapid calcium losses.

#### Calcium in Plant Foods

Food	Serving size	Calcium content (mg)	Percentage of calcium absorbed	Estimated absorbable calcium/serving (mg)
Almonds, dry roasted	1 ounce	80	21	17
Beans, navy	1 cup	121–128	17	21–22
Beans, white	1 cup	161	17	27
Broccoli, boiled	1 cup	178	53	94
Brussel sprouts, boiled	1 cup	56	64	36
Chinese cabbage (bok choy), boiled	1 cup	158	54	85
Cabbage, green, boiled	1 cup	50	65	33

Cauliflower, boiled	1 cup	34	69	23
Figs, dried	5 medium	135	n/a	n/a
Kale, boiled	1 cup	94	59	55
Mustard greens, boiled	1 cup	104	58	60
Orange juice, calcium-fortified	8 fluid ounces	300	38	114
Rice milk, calcium-fortified	8 fluid ounces	300	24	72
Sesame seeds, unhulled	1 ounce	381	21	58
Soymilk, calcium-fortified	1 cup	300	24	72
Spinach, boiled	1 cup	244	5.1	12
Tofu, calcium-set, firm	_ cup	258	31	80
Total® Cereal	_ cup	1000	30	300
Turnip greens, boiled	1 cup	198	52	103

Sources:

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### Meal Planning

- Include calcium-rich greens (kale, collards, mustard greens, turnip greens, bok choy, Swiss chard, etc.) and beans in your routine. Add greens and/or beans to stir-fries, sauces, salads, and casseroles.
- Have calcium-rich snacks, such as figs, raisins, almonds, and dates.

- Replace cow's milk with rice milk, almond milk, or oat milk in meals and recipes.
- Sprinkle nutritional yeast on pasta and other main dishes for a healthy cheesy alternative to regular cheese.
- Try fresh fruit sorbets and non-dairy frozen desserts instead of ice cream or frozen yogurt.
- Enjoy oatmeal and other calcium-rich breakfast cereals with fresh fruit and rice milk for breakfast.

## **Recommended Recipes**

Creamy Spinach Dip (page 82)

Braised Collards or Kale (page 102)

**Penne with Fresh Spinach, Tomatoes, and Olives (page 121), topped with nutritional yeast**

Store-bought lemon or raspberry sorbet for dessert

## **To Do This Week**

Did you ever switch from whole milk to skim or nonfat milk? How did the new version taste at first? For many people, fat-reduced milks taste watery and a bit "off" at first. But after two or three weeks, what happened? The new milk tasted perfectly fine, didn't it? And if you ever went back to whole milk, what was it like then? Chances are, it seemed too thick and fatty—almost like paint.

It takes only a couple of weeks for your tastebuds to accommodate to new tastes. So if you try rice milk or another non-dairy beverage, it will probably not taste quite right at first. But within a couple of weeks, it will taste perfectly fine.

This week, take a trip to the health food store (or a large, well-stocked grocery store). If you normally drink milk or add it to cereal, pick up a few different brands of rice milk and give them a try. Notice they come in regular, vanilla, chocolate, and perhaps other flavors, as well as low-fat varieties and other products enriched with vitamins and calcium.

If you are a fan of yogurt, ice cream, sour cream, or cheese, don't worry. Health food stores stock non-dairy substitutes for them, too. Some are more

flavorful than others, so try a few different varieties and see which ones appeal to you.

### **Section 3 References**

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