



Hot Topic: Health and Nutrition Benefits of Traditional Cheese

Prepared for Oldways Preservation Trust, reviewed by Kelly Toups and Brad Jones

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“Very often the opening statement of any class or seminar I teach is ‘Cheese is good food.’ It is near-perfect, primordial nourishment, the preserved form of the newborn mammal’s first source of nutrition and calories— It’s mother’s milk. Indeed, I always like to say a chunk of real cheese is arguably a better food than the incredible, edible egg.” So celebrated author and fromager Max McCalman begins the very first chapter of Mastering Cheese. Despite much popular misunderstanding, not only is cheese delicious, it’s nutritious. Scientific studies reveal that when consumed in moderation, cheese is a delicious way to add healthy fats, minerals, vitamins, and probiotics to your diet. Cheese serves as an important source of high-quality protein, fortified vitamin A and D, and minerals such as calcium, magnesium, and potassium. Cheese is not just good for your bones and teeth, but also your heart, metabolism, and yes, even your waistline. Next we present how cheese can contribute to a healthy lifestyle.

Cavities and Bone Health

Cheese is notorious for being a good source of calcium, an essential nutrient for building and maintaining strong bones and teeth. But cheese is associated with healthy teeth for other reasons as well. Our mouths harbor many symbiotic microorganisms that help us digest food. While generally beneficial, these bacteria can also contribute to the formation of plaque. Dental plaque forms naturally over time, but oral environments with a low (acidic) pH generally cause it to develop faster (1).

Scientists have assessed the changes in oral pH that result from eating various food and found that pH significantly drops (becoming more acidic) after consuming carbohydrates (1). Carbohydrates are found not only in soda and candy, which are commonly known to harm our teeth, but also in grains, fruit, and baked goods. On the other hand, some foods trigger the release of more saliva and help to not only bring pH back to neutral but protect against plaque formation. Cheese is one of these foods. Researchers have found that milk, yogurt, and cheese were all protective against cavities, but cheese in particular raised the

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plaque pH significantly higher than the rest of this dairy group (1). This is great news for dental hygiene.

Calcium found in cheese is essential for not only healthy teeth but also healthy bones. 70% of our bone density is made up of calcium phosphate (2). Diets deficient in dietary calcium can lead to a significant decrease in bone density. Another important mineral found in cheese, magnesium, has recently been shown to also be critical for bone health. Research suggests that magnesium is associated with an increase in total bone mineral content and bone density (2). We know that cheese and dairy are important sources of both calcium and magnesium and these foods are essential for bone health, especially for adolescents and the elderly.

Probiotics

Cheese contains significant quantities of good probiotics—the live bacteria in foods that have been the focus of much recent interest and research; especially those made with raw-milk. In a healthy state, our guts contain millions of these microscopic bacteria, each variety serving unique ends. Our gastrointestinal (GI) tract and the flora of microorganisms associated with it play a significant role in our overall health and wellbeing. Probiotics have been shown to positively impact our metabolism, immune function, nutrition absorption rates, and much more.

In particular, probiotics have anti-inflammatory effect. By reducing inflammation, probiotics can ameliorate reactions to allergens and work to treat obesity as well as diabetes (3). Through modulating the gut microflora, probiotics have been shown to improve weight status and the body's sensitivity to insulin (3). Recent research has shown that overweight women have much lower levels of a particular probiotic, Bifidobacteria, than normal weight women (3). This indicates that an individual's gut microflora can significantly impact their risk for obesity. Other research has observed that obese people tend to harvest more energy from the foods they eat than healthy-weight individuals and concludes that the microflora of the gut is the main contributor for why this happens (3)(4). In terms of metabolic disease including type 2 diabetes, it has been shown that *Lactobacillus acidophilus* decreases insulin resistance (3). This is a major finding for type 2 diabetes because the disease's primary characteristic is insulin resistance. A daily probiotic might be a promising therapy against obesity and type 2 diabetes.

While the body of literature on probiotics is growing it is a relatively new area of focus. We still do not understand all of the mechanisms for how probiotics improve health. What we do know is that cheese and many dairy products contain probiotics, which have increasingly been shown to provide significant health benefits.

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Heart Health

Heart disease, like obesity, is a multifactorial condition with many risk factors. The Framingham Heart Study has provided significant insights on the etiology of the disease and what factors contribute to risk. This study and others have conclusively shown that more than genetics and physical activity determine our heart health; diet is also a significant factor. Two decades ago there was the widespread belief that fat, specifically trans and saturated fat, as well as cholesterol, were the primary factors contributing to high rates of heart disease in the United States and elsewhere. But this is generally no longer held to be true. Although evidence has linked the consumption of saturated fat to increases in LDL or “bad cholesterol” and increases in heart disease, recent findings suggest that this link may be less straightforward than once thought, as not all saturated fats are created equal. In fact, in clinical trials analyzing the consumption of equivalent quantities of saturated fat from full-fat natural cheese and butter, consuming cheese significantly lowers bad cholesterol compared to consuming butter (5).

The relationship between saturated fat and heart disease has grown even more complex as studies show that calcium can improve blood cholesterol profiles. To assess whether reduced-fat milk or cheese-based diets, containing similar amounts of calcium, affect cholesterol differently, 15 healthy men (age 18-50) were randomized into either a milk-based diet, cheese-based diet, or nondairy control diet. The effects of a milk or cheese-based dietary intervention did not differ. Both experienced attenuated increases in total cholesterol and LDL-cholesterol (“bad cholesterol”) compared to the control diet (6). In addition, increased fat excretion was seen in both intervention diets, but not in the control diet (6). The association between cholesterol and cheese and dairy increasingly indicates that it has protective effects against heart disease.

Other studies have also given close scrutiny to the relationship between heart disease and dairy intake. One such study found that those who consumed five or more servings a week of whole fat milk, yogurt, and cheese had a significantly better Cardiovascular Health Score than those who consumed these products less frequently (7). This positive relationship was also observed with total dairy intake, but not total low-fat dairy intake (7). This evidence supports the notion that consuming cheese and dairy products regularly can be an important part of a healthy diet and lifestyle.

While both conventional and pastured dairy can be healthy choices, research shows that pastured dairy may actually unlock additional health benefits and provide higher concentrations of unique nutrients. For example, organic milk produced by cows that are grass-fed rather than fed a grain-based diet, is shown to contain 62% more omega-3 fats than conventional milk (8). Omega-3 fats are often associated with fish, but are present in

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milk depending on the cow's diet. Higher intake of this type of fat may reduce the risk of cardiac disease and provide a host of other health benefits.

Metabolism and Type 2 Diabetes

Diabetes is another chronic condition that is often associated with obesity and a lack of physical activity. There is compelling evidence that diet and lifestyle changes are the best way to prevent type 2 diabetes and dairy and cheese consumption has been shown to decrease risk for the disease. Many studies have linked cheese and dairy to glucose metabolism, but the exact mechanism for how this works remains unknown.

Eating dairy daily can have positive effects on your metabolic health. In a research study, participants who ate a moderate amount of dairy had significantly lower blood sugar levels, good news for preventing type 2 diabetes (9). Total dairy intake was also significantly associated with lower blood pressure (9). Researchers concluded that when people choose to eat dairy, they experience small but significant benefits to their metabolic health.

In another study, published in 2015, researchers assessed whether the source of fat mattered for the incidence of type 2 diabetes. Previous evidence had suggested that dietary fat is closely related to the metabolism of glucose, a crucial factor in diabetes. They assessed dietary fat intake in nearly 27,000 adults and found that greater consumption of cheese had a protective effect against type 2 diabetes in women (10). When researchers specifically looked at the types of saturated fat between foods, they found that lauric acid (12:0) and myristic acid (14:0) were significantly associated with decreased risk (10). Cheese contains both of these saturated fatty acids, which could explain part of its protective effect. Saturated fats are not created equal; the saturated fatty acids in cheese appear to be more nutritious than those found in butter for example (10).

Additionally, there appears to be a dose response related to cheese and dairy consumption. Risk of type 2 diabetes was reduced by 5% for every serving of total dairy per day and a 10% for every serving of low-fat dairy per day (11). In a systematic review of 17 cohort studies, dairy intake was significantly associated with reduced risk of type 2 diabetes as well as cheese specifically. Those who consumed three tablespoons of cheese a day had an 8% reduction in risk for developing type 2 diabetes (12). Similarly, a meta-analysis of 14 studies found that one-ounce of cheese per day provides a 20% reduction on individual risk for type 2 diabetes (13). While we do not have a definitive answer on the daily dietary recommendation, this evidence suggests that cheese is essential for our health and our metabolism.

Weight

With high rates of obesity, it is estimated that 45 million, in the United States alone, are dieting every year (14). Many of today's popular diets cut out specific foods or food groups. Dairy is oftentimes one of the first foods eliminated when wanting to lose weight. Even though cheese and dairy are important sources of essential vitamins and minerals, dieters tend to demonize it because it can be high in fat and calories. However, there have been many articles published in recent years evaluating whether cheese actually makes us fat. In one study, researchers found that those who consumed more milk, yogurt, and cheese were less likely to be overweight or obese compared to those who did not eat very much (15). Another weight loss study found that obese adults who had three servings a day of milk, yogurt or cheese lost 70% more bodyweight and 64% more body fat than those who had less than one serving per day (16).

For many dieters, if they do eat cheese and dairy they often select non-fat or low-fat options. However, a study conducted in Sweden observed that even whole-fat dairy could be an important part of a healthy diet. These results showed that normal-weight women who had more than 1 serving a day of higher fat dairy foods (whole milk, sour cream, cheese, etc.) were less likely to gain two pounds or more per year compared to women who habitually ate less dairy (17). The women who did not eat dairy often were actually at higher risk of gaining two pounds per year.

Dairy fat is particularly unique because it is one of the few foods in our food supply that provides a dietary source of short-chain fatty acids, particularly butyrate (C4:0). This short-chain fatty acid has an important role in the health of our gut. It has anti-inflammatory properties and provides energy to the cells that line our intestines (18). In addition to these properties, butyrate also influences our weight. It is shown to increase circulating levels of leptin, a hormone that is important in regulating our appetite and tells our brain that we are full (18). Some obese individuals have chronically low levels of leptin causing them to feel hungry more often. Researchers hypothesize that the amount of butyrate in dairy fat (approximately 4%) could have "clinically relevant effects on our body weight and metabolic health" (18).

Childhood obesity is another rising public health challenge. Studies have shown just how essential it is for children to consume cheese and dairy on a regular basis, impacting both their growth and their health. After following a group of children from the age of two to eight, researchers discovered that those who ate more calcium-rich foods such as cheese, milk, and yogurt had a lower percentage of body fat (19). Another study investigated whether children ate more calories at lunch if they were given low-fat milk, apple juice, or water during breakfast. The researches observed that children who were served low-fat milk at breakfast consumed significantly fewer calories at lunch than those who had water

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(122.25 kcal) or apple juice (59.06 kcal) at breakfast. Researchers concluded that one serving of low-fat milk may reduce short-term energy intake, but might not affect total energy intake throughout the day (20). More research is needed to address whether these results hold up during long term interventions, but we can see that dairy has an important place in children's diet.

Dietitians have observed that often when people cut out dairy from their diet, they tend to snack more because they feel like they are "missing something." The fat in dairy foods helps us feel satisfied after a snack or meal. One proposal for dairy's effect on weight is that when we feel satisfied we tend to eat less in between meals. Snacks chosen between meals are often less nutritious as well. It is important to remember that cheese, like any food product, should be consumed in moderation. Cheese is still a food higher in fat and calories, but 1-3 ounces of cheese per day can provide lifelong benefits.

Conclusion

Although there remains widespread misunderstanding about the role of dairy in healthy diet, there is a growing body of evidence suggesting that cheese and other dairy products provide a multitude health benefits. Not only is cheese an important source of protein, vitamins, and minerals, but it also works against chronic conditions such as obesity, heart disease, and diabetes. Health conscious individuals would do well to keep these benefits in mind before eliminating cheese and dairy from their diet. Cheese is not only delicious, it is nutritious.

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