

## PASTEURIZATION

Pasteurization is a process of heat treating milk to kill bacteria. Although Louis Pasteur developed this technique for preserving beer and wine, he was not responsible for applying it to milk. That was done at the end of the 1800s as a temporary solution until filthy urban dairies could find a way to produce cleaner milk. But instead of cleaning up milk production, dairies used pasteurization as a way to cover up dirty milk. As milk became more mass produced, pasteurization became necessary for large dairies to increase their profits. So the public then had to be convinced that pasteurized milk was safer than raw milk. Soon raw milk consumption was blamed for all sorts of diseases and outbreaks until the public was finally convinced that pasteurized milk was superior to milk in its natural state.

Today if you mention raw milk, many people gasp and utter ridiculous statements like, "You can die from drinking raw milk!" But the truth is that there are far more risks from drinking pasteurized milk than unpasteurized milk. Raw milk naturally contains healthy bacteria that inhibit the growth of undesirable and dangerous organisms. Without these friendly bacteria, pasteurized milk is more susceptible to contamination. Furthermore, modern equipment, such as milking machines, stainless steel tanks and refrigerated trucks, make it entirely possible to bring clean, raw milk to the market anywhere in the US.

Not only does pasteurization kill the friendly bacteria, it also greatly diminishes the nutrient content of the milk. Pasteurized milk has up to a 66 percent loss of vitamins A, D and E. Vitamin C loss usually exceeds 50 percent. Heat affects water soluble vitamins and can make them 38 percent to 80 percent less effective. Vitamins B6 and B12 are completely destroyed during pasteurization. Pasteurization also destroys beneficial enzymes, antibodies and hormones. Pasteurization destroys lipase (an enzyme that breaks down fat), which impairs fat metabolism and the ability to properly absorb fat soluble vitamins A and D. (The dairy industry is aware of the diminished vitamin D content in commercial milk, so they fortify it with a form of this vitamin.)

We have all been led to believe that milk is a wonderful source of calcium, when in fact, pasteurization makes calcium and other minerals less available. Complete destruction of phosphatase is one method of testing to see if milk has been adequately pasteurized. Phosphatase is essential for the absorption of calcium.

## ULTRAPASTEURIZATION

As the dairy industry has become more concentrated, many processing plants have switched to ultrapasteurization, which involves higher temperatures and longer treatment times. The industry says this is necessary because many microorganisms have become heat resistant and now survive ordinary pasteurization.

Another reason for ultrapasteurization is that it gives the milk a longer shelf life--up to four weeks. The grocers like this but many consumers complain of a burnt or dead taste. The milk is virtually sterile--is that what you want to drink?

Milk producers are not advertising the fact that they are ultrapasteurizing the milk--the word is written in very small letters and the milk is sold in the refrigerator section even though it can be kept unrefrigerated until opened. Horizon, the major organic brand, is ultrapasteurized, as are virtually all national brands.

## HOMOGENIZATION

Milk straight from the cow contains cream, which rises to the top. Homogenization is a process that breaks up the fat globules and evenly distributes them throughout the

milk so that they do not rise. This process unnaturally increases the surface area of fat exposing it to air, in which oxidation occurs and increases the susceptibility to spoilage. Homogenization has been linked to heart disease and atherosclerosis.

## **MILK: TO DRINK OR NOT TO DRINK?**

Considering how modern commercial milk is produced and processed, it's no wonder that millions of Americans are allergic to it. An allergic reaction to dairy can cause symptoms like diarrhea, vomiting (even projectile vomiting), stomach pain, cramping, gas, bloating, nausea, headaches, sinus and chest congestion, and a sore, or scratchy throat. Milk consumption has been linked to many other health conditions as well, such as asthma, atherosclerosis, diabetes, chronic infections (especially upper respiratory and ear infections), obesity, osteoporosis and cancer of the prostate, ovaries, breast and colon.

Once you understand how modern milk is produced and processed, it seems logical to just avoid it altogether. But Real Milk--full-fat, unprocessed milk from pasture-fed cows--contains vital nutrients like fat-soluble vitamins A and D, calcium, vitamin B<sub>6</sub>, B<sub>12</sub>, and CLA (conjugated linoleic acid, a fatty acid naturally occurring in grass-fed beef and milk that reduces body fat and protects against cancer). Real milk is a source of complete protein and is loaded with enzymes. Raw milk contains beneficial bacteria that protect against pathogens and contribute to a healthy flora in the intestines. Culturing milk greatly enhances its probiotic and enzyme content, making it a therapeutic food for our digestive system and overall health.

So the answer to the question is--go ahead and drink milk only if you can get unprocessed milk from pastured cows. In the meantime, here are a few steps that can help you make the transition to more natural dairy products.

## **Asthma or Brucellosis: The Dangers and Benefits of Raw Milk**

Two articles appearing recently in the prestigious British medical journal, *The Lancet*, illustrate the ongoing debate on the dangers and merits of raw milk. One article describes the case of a woman who contracted brucellosis after eating some raw goat cheese during a trip to Italy.<sup>1</sup> The cause of her fibromyalgia-like symptoms was determined after exhaustive tests to be brucellosis or undulant fever, and the source traced to ingestion of unpasteurized soft cheese during her European holiday. She was treated successfully with the appropriate antibiotics.

The second article describes a study carried out by scientists in Salzburg, Austria. Researchers examined the history of allergy, asthma and "atopic sensitization" or skin problems in 812 children, 319 of whom had grown up with a "regular exposure to a farming environment" including the consumption of "farm milk," that is, raw, whole, unprocessed milk.<sup>2</sup> The remaining group of 493 non-farming children acted as a control. Frequency of asthma was reduced from 11 percent found in the control group to 1 percent among the farming-exposed children. Similarly, hay fever occurred in only 3 percent of the farming-exposed children, compared with 13 percent of the controls, and atopic sensitization occurred in 12 percent of the farming group and in 29 percent of the controls.

The researchers found that the timing of exposure to the farm environment and raw milk was critical. Those children exposed during the first year of life showed the greatest protective effect. Continual long-term "exposure to stables" until age five

years was associated with the lowest frequencies of asthma, hay fever and atopic sensitization.

Subsequent comments on this article<sup>3</sup> stress "exposure to stables" as the determining factor but we wonder whether this is any different than exposure to pets in the typical urban home. It is much more likely that consumption of raw milk is the determining factor because this variable can be uniquely determined.

These two articles perfectly describe the dilemma confronting health officials. Should our milk be pasteurized to prevent the rare case of brucellosis transfer; or should raw milk be made available to avoid asthma and dermatitis in our growing children?

Any mother who has observed the suffering of her asthmatic child, or wracked her brain to find a product that will stop her youngster's unsightly and itchy rash, would opt for the latter. These illnesses—for which modern medicine can offer only palliatives—cause so much lost school, missed activities, and physical and psychological suffering that any mother would gladly risk contracting brucellosis herself in order to have protective raw milk available for her growing children, particularly when undulant fever is easily cured with a dose of antibiotics.

And particularly when modern science makes it possible to have brucellosis-free herds. Tests are widely available to detect brucellosis in cattle, goats and sheep. In addition, studies have shown that the risk of brucellosis increases as herd size goes up.<sup>4</sup> Nutrition of the animals almost certainly plays a role. Small herds on fertile pasture or appropriate feed, regular testing, clean barns, milking machines, stainless steel tanks and refrigerated trucks all make it entirely possible to get healthy, clean, certified raw milk to the public.

The alternative—pasteurized, processed milk from large herds crowded into barns and given hormones and antibiotics—causes problems in an increasing number of people. How many customers does the dairy industry have to lose to putative "milk allergies" before it sees the light and opts for quality rather than quantity, for thousands of prosperous small dairies delivering directly to the consumer rather than small numbers of huge herds, confined to barns and producing dirty milk that must have its vital elements destroyed by pasteurization and processing.

1. *Lancet* 1999 Jul 24;354(9175):300.

2. *Lancet* 2001 Oct 6;358(9288):1129-33.

3. *Lancet* 2002 Feb 16;359(9306):623-4.

4. *Preventive Veterinary Medicine*, 1998 Dec;1(37):185-196.

## Legal status

### Worldwide

Commercial distribution of packaged raw milk is prohibited in many countries. However, 28 US states allow sales of raw milk, and in other parts of the world, raw milk can often be bought directly from the farmer. In England, about 200 producers sell raw, or "green top" milk direct to consumers, either at the farm or through a delivery service. Raw milk is sometimes distributed through a share program, wherein the consumer owns a share in the dairy animal or the herd, and can be considered to be consuming milk from their own animal. In the United States, Arizona, California, Connecticut, and Washington allow raw milk sales in retail stores with appropriate warning labelling.

### In Middle East

Human consumption of raw camel milk is very popular in the Middle East, especially in rural areas. In many large cities there are people who sell raw milk, although some large cities are illegalizing that due to hygiene issues.

### In Africa

Although milk consumption is fairly low compared to the rest of the world, in tribes where milk consumption is popular, such as the Maasai tribe, milk drunk is typically unpasteurized.

### In Europe

Milk is typically consumed unpasteurized in rural areas of Europe, and raw milk can typically be found in small amounts at stores in large cities.

### In Asia

In rural areas of Asia where milk consumption is popular, milk is typically unpasteurized. In large cities of Asia, raw milk, especially from water buffalo, is typical. In most countries of Asia, laws prohibiting raw milk are nonexistent or rarely enforced.

### In Australia

Raw milk for drinking purposes is illegal in all states and territories, as is all raw cheese. This has been circumvented somewhat by selling Raw milk as 'bath milk'. An exception to the cheese rule has been made recently for two [Roquefort cheeses](#).

There is some indication of share owning cows, allowing the "owners" to consume the raw milk, but also evidence that the government is trying to close this loop hole.<sup>[4][5]</sup>

## In Canada

The sale of raw milk directly to consumers is prohibited in [Canada](#)<sup>[6]</sup> under the *Food and Drug Regulations* since 1991.

### Section B.08.002.2 (1)

“ no person shall sell the normal lacteal secretion obtained from the mammary gland of the cow, genus *Bos*, or of any other animal, or sell a dairy product made with any such secretion, unless the secretion or dairy product has been pasteurized by being held at a temperature and for a period that ensure the reduction of the alkaline phosphatase activity so as to meet the tolerances specified in official method MFO-3, Determination of Phosphatase Activity in Dairy Products, date November 30, 1981.<sup>[7]</sup> ”

However, like the United States, Canada permits the sale of raw milk [cheeses](#) that are aged for at least 60 days.

## In the United States

Most states impose restrictions on raw milk suppliers due to concerns about safety. Every state but Pennsylvania, California, New York, and Maryland has passed the *Pasteurized Milk Ordinance* originally proposed by the [United States Public Health Service](#) in 1924. The most recent version is called the *2003 Grade "A" Pasteurized Milk Ordinance*.<sup>[8][9]</sup> All 50 states permit the sale of raw milk cheeses that are aged for at least 60 days.

Raw milk may be sold from the farm in 28 states under varying restrictions. In California, Connecticut, Maine, Pennsylvania, South Carolina and New Mexico it may be sold in stores. Washington State allows raw milk to be sold with restrictions.<sup>[10]</sup> Some states allow raw milk to be sold "for animal consumption" only.

Although it is illegal in Indiana, Michigan<sup>[11]</sup> and Ohio for a [dairy](#) to sell raw milk, consumers are able to lease part of a cow (a "cow share") or part of a herd (a "herd share") to obtain raw milk. In Michigan, for example, "milk groups" have been formed in which suburban families take turns travelling to a distant dairy farm to obtain the week's raw milk for all the members of the group.

The FDA reports that, in 2002, consuming raw milk and raw milk products caused 200 Americans to become ill in any manner <sup>[12]</sup>. In comparison, a 1999 CDC report showed that consuming undercooked fish and shellfish causes approximately 8,000 cases of *Vibrio* illness annually,<sup>[13]</sup><sup>[neutrality disputed]</sup> in addition to all cases of salmonella poisoning, Yersiniosis, Listeriosis, Hepatitis, Gastroenteritis, Diphyllorbothriasis, and Nanophytetiasis.<sup>[14]</sup>