

Camel Milk Pasteurization: How Does Heat Affect The Milk?



How do you like your milk? Whole? Skim? 2 percent?

Those used to be the only questions most of us thought about. But things are different now. As a host of non-dairy alternatives (like camel milk) have burst onto the scene, we find ourselves with more options in the milk aisle than ever before.

Another question adds a kink to the picture: pasteurized or raw?

Many of us have had only pasteurized milk for all of our lives. With all the dangerous rumors about raw milk consumption, it's hard for some to even consider it. But that hasn't stopped the raw foods movement, which drives people to travel even long distances and get raw milk from local farmers in a quest for better nutrition.

How does heat pasteurization affect camel milk? What is best choice for you? There's a lot of misinformation out there. So let's get to the bottom of it!

The Raw Milk vs. Pasteurized Milk Debate

Over the past few years, there has been a huge resurgence in the raw foods movement. The general idea is that foods consumed in their most natural, preprocessed states offer the most nutritional benefits.

This used to be the default way of doing things before industrial farming and agriculture stepped in. But now, as people are increasingly interested in the quality of what they put in their bodies, for some of us it's starting to come full circle.

However, pasteurization proponents are standing their ground. They're going out of their way to talk about the dangers of consuming raw milk. It's one of those sticky debate topics, like religion or politics.

To make matters even more confusing: most of our opinions on the raw versus pasteurized debate have been influenced by decades of recommendations urging us to avoid raw milk at all costs. Yet this comes from the context of *cow milk* - a significantly different situation than camel milk.



What is Pasteurization?

Pasteurization, invented by French scientist Louis Pasteur during the nineteenth century, is an industrial process designed to kill microbes (mostly bacteria) in drinks like milk, juices, and others.

This innovation was one of necessity. As industrialization changed the economy and people flocked to cities, they started getting their milk from commercial dairy operations instead of local family farms. Sloppy sanitation and handling meant that many raw milk products were unclean - and potentially harmful.

It's key to point out here that pasteurization does not equal 100 percent sterilization. Sterilization is a different process designed to kill *all* pathogens within the food or drink. It's not that common because it changes the taste and quality of the end product dramatically.

Pasteurization, on the other hand, is an effort to reduce the number of viable pathogens so they are unlikely to cause harm... assuming you follow the storage directions and drink your milk by the expiration date.

Pasteurized milk is heated then packaged and sold. Two key variables here are: 1) temperature, and 2) duration. The higher the temperature and longer the time heated, the longer the shelf life but the greater the possibility for nutrient degradation.

How Heat Pasteurization Affects Camel Milk

Heating camel milk during the pasteurization process does cause certain changes. Here's a quick rundown on how different aspects of the end product are affected:

Nutrients

Camel milk provides a rich source of nutrients in both pasteurized and raw forms. It differs from cow milk because it contains low cholesterol, high minerals, low sugar, high vitamin C and other protective proteins like

lactoferrin and lactoperoxidase.

Just one eight-ounce glass of camel milk contains:

- 64 percent the daily value (DV) of vitamin B1 (thiamin)
- 16 percent the DV of phosphorus
- 16 percent the DV of potassium
- 32 percent the DV of calcium
- 16 percent the DV of protein
- 16 percent the DV of vitamin B2 (riboflavin)

Pasteurization can potentially degrade *some* of these vitamins and minerals, but that is the tradeoff made for the peace of mind pasteurization might bring.

However, even if these nutrients are slightly degraded from their raw natural state, they're still superior to quantities found in cow milk. Also, camel milk proteins are more heat resistant than those of cow milk; some researchers noted no denaturation after heating at 72 degrees Celsius for five minutes (a time significantly longer than the typical pasteurization process.)

Probiotic Bacteria

Camel milk contains beneficial probiotic bacteria like *Lactobacillus Plantarum*, which has been shown to improve the gut microbiome and reduce the severity of leaky gut syndrome.

We haven't seen a study that explores just how much these beneficial bacteria degrade during heat pasteurization. But we can assume that these do degrade somewhat, because pasteurization doesn't discriminate between "good" and "bad" bacteria.

Fortunately, there are plenty of all-natural steps we can take to get the probiotics we need and significantly improving our gut health. So if you're more comfortable drinking pasteurized camel milk, there's absolutely no pressure why you *must* drink it raw. You could try other things, like eating more fermented foods, managing your stress and taking probiotic supplements, to optimize your gut health.

Immunoglobulins (Antibodies)

Camel milk contains immunoglobulins, antibodies that can support and strengthen the immune system. These immunoglobulins have antibacterial, antiviral, and antimicrobial properties.

One Japanese study explored heat pasteurization effect on those immunoglobulins. They focused specifically on an antibody from camel milk called “camelid heavy chain antibody “(VHH), which has promising antibiotic properties because it’s much more heat resistant than conventional antibodies.

Researchers heated samples of VHH at different temperatures and for durations to track the effect on antibody activity. They found that “significant denaturation” didn’t occur until temperatures reached 70 degrees Celsius. Predictably, the higher the temperature and longer the duration, the greater the degradation in antibody activity.

These results are expected, as even the most heat resistant antibodies will falter once temperatures and durations are high enough. But we have to take this with a grain of salt. The heating is done in five-minute cycles. Pasteurization is usually much shorter, only about 15 to 30 seconds, so it’s hard to know for sure whether the degradation would be significant for camel milk produced for commercial sale.



The Case for Choosing Raw Camel Milk

As we pointed out above, choosing raw camel milk is a good option if you're looking to maximize beneficial gut bacteria and immune system benefits.

We've heard the case against raw milk for decades. Raw milk has gotten a bad rap, and you're probably heard stories about people drinking raw *cow milk* and getting sick. But this is a much different situation than with camel milk. With typical cow milk, cows are given antibiotics growth hormones, traces of which can make it into the end product.

Camel milk farming is much different, particularly if you get your milk from a reputable source: small-scale farmers who adhere to the highest sanitation standards, refuse to use hormones, and stick to natural diets.

If you choose raw camel milk, you'll be drinking it in its most natural form, which is an important psychological benefit for some.

The Case for Choosing Pasteurized Camel Milk

Although some research suggests that nutrients and immunoglobulins might be degraded after pasteurization, pasteurized camel milk remains an incredible source of nutrients.

If your top priority is to strengthen your immune system or improve your gut health, you can lay a solid foundation with camel milk and change your diet and lifestyle to achieve those goals.

You could:

- Focus on organic, high-quality produce, protein, and healthy fats (like coconuts and avocados)
- Avoid inflammatory sugars, grains, and processed carbohydrates
- Be proactive about managing your stress
- Eat more probiotics
- Exercise
- Get more sleep (at least seven to eight hours a night)
- Take probiotic supplements

For some people, pasteurized milk offers peace of mind. Drinking camel milk after it has been heated might not be the most “natural” form, but it’s a tradeoff some are willing to make to reduce the (extremely unlikely) chance of a pathogen slipping through.

Two Great Choices - and a Personal Decision

There’s good reason why we’re agnostic about the raw versus pasteurized camel milk issue. Both are excellent choices, and ultimately it’s a personal decision.

In either form, camel milk gives you a great base of nutrients to build on. Choosing raw camel milk gives you the maximum amount of nutrients, probiotics, and immunoglobulins. Opting for pasteurized might give you more peace of mind. Whichever you choose, you can also take other steps to improve your gut health and immune system. Win, win.

Have you tried raw or pasteurized camel milk? How did you make your

decision? Leave a comment below and share your experience!