

MULTIFACETED NUTRITIONAL BENEFITS OF BUTTERMILK, MILK, YOGHURT AND LASSI

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ABSTRACT

The name "buttermilk" comes from its origin as the liquid leftover after churning butter from cream. The word is a compound of "butter" and "milk," reflecting its derivation as the milk remaining after the butterfat has been extracted. This process, done in a churn, separates the butter from the liquid, which is then called buttermilk. Buttermilk is also known as Chaas in some parts of India, especially when referring to the traditionally churned version. It's a refreshing, slightly sour fermented dairy drink made by churning yogurt and water. In Hindi, it's often referred to as Chhach. Buttermilk isn't the result of a single invention, but rather a naturally occurring by-product and a later fermented dairy product. It originated as the liquid remaining after churning butter, a practice that dates back to ancient times, particularly in the Near East and India. The concept of fermenting milk to create a drink, such as cultured buttermilk, also has ancient roots. While the early understanding of fermentation was not scientifically precise, it was known and practiced for centuries.

KEYWORDS: Butter, Milk, Yoghurt, Lassi, Dairy product, Homogenization, Marination, Fermentation.

Overview

Buttermilk is a fermented dairy drink. Traditionally, it was the liquid left behind after churning butter out of cultured cream. As most modern butter in Western countries is not made with cultured cream but uncultured sweet cream, most modern buttermilk in Western countries is cultured separately. No, buttermilk is not the same as curd (or yogurt). While both are dairy products derived from milk, buttermilk is a by-product of making

butter, and curd is the result of fermenting milk. Buttermilk is the liquid remaining after butter is churned out of curd, whereas curd is the solid, fermented product. Buttermilk can be drunk straight, and it can also be used in cooking. In making soda bread, the acid in buttermilk reacts with the raising agent, sodium bicarbonate, to produce carbon dioxide which acts as the leavening agent.



Figure-1: Buttermilk, Milk, Lassi and Yoghurt.

Buttermilk is also used in marinating, especially of chicken and pork. Originally, buttermilk referred to the thin liquid left over from churning butter from cultured or fermented cream. Traditionally, before the advent of homogenization, the milk was left to sit for a period of time to allow the cream and milk to separate. During this time, naturally occurring lactic acid-producing bacteria in the milk fermented it. This facilitates the butter churning process, since fat from cream with a lower pH coalesces more readily than that of fresh cream. The acidic environment also helps prevent potentially harmful microorganisms from growing, increasing shelf life. Traditional buttermilk is still common in many Arab, Indian, Nepalese, Pakistani, Finnish, Polish, Dutch, German, Danish, and Austrian households, but rarely found in other Western countries. It is a common drink in many Indian and Nepalese homes, and often served with roasted maize. In Arab culture, buttermilk is commonly sold ice cold with other dairy products. It is popular during Ramadan, when it is consumed during iftar [Iftar is the evening meal that Muslims eat after sunset to break their daily fast during the holy month of Ramadan. It marks the end of the daily fast and is a time for celebration, community, and spiritual reflection] and suhur [Suhur is the pre-dawn meal eaten by Muslims before fasting during the month of Ramadan. It's a vital part of the fasting ritual, helping to prepare the body for a day without food or drink. The meal is consumed before the Fajr prayer [During the Islamic holy month of Ramadan, Muslims begin fasting with the fajr prayer.], which marks the beginning of the fasting period].^[1-3]

Cultured buttermilk: Commercially available cultured buttermilk is milk that has been pasteurized and homogenized, and then inoculated with a culture of *Lactococcus lactis* or *Lactobacillus bulgaricus* plus *Leuconostoc citrovorum* to simulate the naturally occurring bacteria in the old-fashioned product. The tartness of cultured buttermilk is primarily due to lactic acid produced by lactic acid bacteria while fermenting lactose, the primary sugar in milk. As the bacteria produce lactic acid, the pH of the milk decreases and casein, the primary milk protein, precipitates, causing the

curdling or clabbering of milk, making cultured buttermilk thicker than plain milk. While both traditional and cultured buttermilk contain lactic acid, traditional buttermilk is thinner than cultured buttermilk.

Acidified buttermilk: Acidified buttermilk is a substitute made by adding a food-grade acid, such as white vinegar or lemon juice, to milk. It can be produced by mixing 1 tbsp (15 mL) of acid with 1 cup (~240 mL) of milk and letting it sit until it curdles after about 10 minutes. Any level of fat content for the milk ingredient may be used, but whole milk is usually used for baking.

Nutrition: Commercially produced buttermilk is comparable to regular milk in terms of food energy and fat. One cup (237 mL) of whole milk contains 660 kilojoules (157 kilocalories) and 8.9 grams of fat. One cup of whole buttermilk contains 640 kJ (152 kcal) and 8.1 grams of total fat. Low-fat buttermilk is also available. Buttermilk contains vitamins, potassium, calcium, and traces of phosphorus. Buttermilk is traditionally made by churning cream to separate butter, leaving behind a tangy, probiotic-rich liquid. Modern buttermilk is often made by adding specific bacteria cultures to milk, which ferment the lactose and create a similar tangy flavour and thicker texture.

1. Separating Cream: Cream is separated from milk, typically through skimming or using a cream separator.
2. Churning: The cream is agitated, usually in a churn or other vessel, until butter separates from the buttermilk.
3. Collection: The remaining liquid, which is the buttermilk, is collected.
4. Buttermilk offers a wide range of benefits, including aiding digestion, boosting immunity, promoting hydration, and supporting bone health. It's a good source of calcium, vitamin B12, and riboflavin, and its probiotic content contributes to a healthy gut. Additionally, buttermilk is low in calories and fat, making it a potentially beneficial choice for weight management.^[4,5]

Buttermilk, cultured, low fat: 40 Calories/100 grams.

Nutrient	Amount (g)	Daily Value (%)
Total Fat	0.9 g	1%
Cholesterol	4 mg	1%
Sodium	105 mg	4 %
Potassium	151 mg	4 %
Total Carbohydrate	4.8 g	1 %
Protein	3.3 g	6%

Buttermilk Substitute: Whole Milk + Lemon Juice. Buttermilk is generally considered easy to digest, even for individuals who are lactose intolerant. The fermentation process used to make buttermilk breaks down lactose into simpler sugars, making it easier to absorb for the digestive system.

Here's a more detailed explanation.

Lactose Breakdown: The fermentation process in buttermilk reduces the lactose content, making it less likely to cause digestive discomfort in people who are lactose intolerant.

Probiotics: Buttermilk contains beneficial bacteria (probiotics) that can aid digestion and improve gut health.

Light and Easily Digestible: Buttermilk is naturally light and easily digestible, making it a refreshing and nourishing drink.

Suitable for Various Body Types: Ayurveda principles suggest that buttermilk is suitable for all three body types (Prakriti) and can help with digestive disorders.

Benefits for Digestion: Buttermilk can improve appetite, aid digestion, and help with common digestive issues like constipation and indigestion.

Add 2 teaspoons of white vinegar or lemon juice to a liquid measuring cup. Then add enough whole milk to the same measuring cup until it reaches 1 cup. Stir it around and let sit for 5 minutes. The homemade “buttermilk” will be somewhat soured and curdled and ready to use in the recipe. Buttermilk can be consumed at any time of the day, but it's often recommended to drink it after meals for digestive benefits, especially in the summer. Drinking buttermilk in the morning on an empty stomach can also be beneficial for boosting digestion and immunity. According to Ayurveda, buttermilk can be consumed at any time, but it's important to consider the weather and place, especially when consuming it in the evening or at night.

Benefits of Drinking Buttermilk

- **Digestive Aid:** Buttermilk aids digestion, helps to combat acid reflux, and reduces gas problems.
 - **Cooling Effect:** It can provide a cooling effect on the body, especially during the summer months.
 - **Skin Hydration:** Buttermilk helps keep the skin hydrated and nourished.
 - **Probiotic Benefits:** It contains lactic acid bacteria, which can enhance gut health and improve digestion.
- Individual Preferences: You can experiment with different times of the day to see what works best for you.
- **Lactose Intolerance:** Some people with lactose intolerance can drink buttermilk with few side effects, as the lactose is broken down by the bacteria.
 - **Consistency:** If you experience any side effects like bloating or gas, consider reducing your intake or adjusting the time of consumption.
 - **Numerous health benefits of drinking buttermilk makes it an all-rounder.** Some prominent benefits of drinking buttermilk are listed below:
 - **Cool The Body:** When you drink buttermilk, its inherently cool nature helps cool your body down. This is ensured by the natural acidity of buttermilk, which regulates body temperature, making it a refreshing choice, particularly during hot weather or after spicy meals.
 - **Keep You Hydrated:** With its high water content and electrolytes like potassium, buttermilk keeps you

hydrated. So, when you consume buttermilk, you replenish fluids lost through sweating.

- **Good for Our Digestive System:** Buttermilk aids your digestive system with probiotics, which are beneficial bacteria that support gut health. These probiotics help maintain a healthy balance of microorganisms in your digestive tract, promoting smoother digestion and potentially easing digestive discomforts.
- **Packed With Nutrients:** Buttermilk is packed with essential nutrients beneficial for your health. It's rich in calcium, protein, and vitamins like B12 and riboflavin, supporting strong bones, muscle function, and energy metabolism.
- **Boosts Energy:** Buttermilk boosts your energy levels thanks to its rich vitamin B12 content. Vitamin B12 helps convert food into energy and makes you feel naturally energised throughout the day.
- **Good for Bones & Teeth:** Buttermilk is rich in calcium and phosphorus, which are essential minerals for maintaining your bone health. This makes it good for your bones and teeth and helps reduce the risk of osteoporosis (a reduction in bone density) and dental issues.
- **Good for Glowing Skin:** Buttermilk contains lactic acid, which helps exfoliate and brighten your skin, giving you a smoother and more radiant complexion.
- **Reduce Blood Pressure:** Buttermilk can also help reduce your blood pressure. With its high potassium content, buttermilk balances the effect of excess sodium.
- **Help to Lower Cholesterol Levels:** The presence of sphingolipid compounds in buttermilk hinders the absorption of cholesterol in your intestines. This helps to lower bad cholesterol levels (LDL) in your body.
- **Good for Immunity:** Buttermilk is good for your immunity because it contains probiotics that support a healthy balance of good gut bacteria, which keeps your immune system strong.
- **Helps in Detoxification:** Buttermilk aids in detoxification by promoting digestion and supporting your liver's natural detox processes. The vitamins and minerals in buttermilk support overall metabolic function, helping your body remove harmful substances effectively.
- **Helps in Weight Loss:** Buttermilk for weight loss. Yes, buttermilk can be an excellent option for its low-calorie content and ability to promote satiety. The high protein content in buttermilk helps you feel full. This, in turn, helps reduce your overall calorie intake.
- **Treat Acidity:** Buttermilk benefits for acidity are well known. It can provide quick relief from acidity, making it a natural and effective remedy for soothing digestive discomfort. Moreover, it neutralises stomach acid. It's cool, alkaline properties help alleviate symptoms like heartburn and indigestion.

- **Make Gut Healthier:** Buttermilk's ability to neutralise stomach acid boosts metabolism and promotes the growth of a healthy gut micro biota, making your gastrointestinal system more robust by helping in regular bowel movement and preventing bowel disorders.
- **Lactose Digestion:** Proper lactose digestion is one of the key buttermilk benefits due to its lower lactose content compared to regular milk. The fermentation process breaks down lactose into simpler sugars, making it easier for your body to digest.
- **Buttermilk and milk have different nutritional profiles,** and their benefits depend on individual needs and preferences. Buttermilk is generally considered more beneficial than milk due to its probiotic content, which can aid digestion and boost gut health. Milk is a good source of calcium, protein, and vitamins, but it may be less easily digested by those with lactose intolerance.^[6,7]

Buttermilk

Probiotics: Buttermilk contains live bacteria that act as probiotics, promoting healthy gut bacteria and aiding digestion.

Lactose Breakdown: The fermentation process in buttermilk breaks down lactose, making it easier to digest for some individuals with lactose intolerance.

Nutrient Rich: Buttermilk is a good source of calcium, protein, and vitamins like B12 and riboflavin, supporting bone health, muscle function, and energy metabolism.

Lower Fat: Buttermilk typically has a lower fat content than whole milk, making it a potentially better choice for those watching their fat intake.

Milk

Calcium Source: Milk is an excellent source of calcium, which is crucial for bone health and overall well-being.

Protein and Vitamins: Milk provides protein and various vitamins, including B12, riboflavin, and vitamin D.

Lactose: Milk contains lactose, a sugar that some people are unable to digest easily, causing digestive discomfort.

For Digestive Health: Buttermilk is generally considered more beneficial due to its probiotic content, which can improve gut health and ease digestion.

For Calcium: Milk is a good source of calcium, but individuals with lactose intolerance may find buttermilk easier to digest and still receive a good amount of calcium.

For Fat Intake: Buttermilk is often lower in fat than whole milk, making it a potentially better choice for those watching their fat intake.

For Personal Preference: Ultimately, the choice between buttermilk and milk depends on individual preferences, digestive sensitivities, and dietary needs.

Lassi and buttermilk are not exactly the same, although they are both based on yogurt and water. Lassi is typically thicker and sweeter, often made with milk or cream and may be flavoured with fruit. Buttermilk, on the other hand, is thinner and saltier or spiced, frequently seasoned with black salt, cumin powder, or coriander.

Lassi

Texture: Thicker, more like a yogurt smoothie.

Taste: Sweet, often with sugar, milk, or cream added.

Flavours: Can be flavoured with fruits, or sometimes with spices like cardamom or rose water.

Ingredients: Yogurt, water, and sometimes milk, cream, sugar, and/or fruit.

Purpose: Often enjoyed as a meal replacement or a dessert, especially in warmer climates.

Buttermilk

Texture: Thinner, more liquidy.

Taste: Salty or spiced, with additions like black salt, cumin powder, or coriander.

Flavours: Can be seasoned with spices or herbs.

Ingredients: Yogurt, water, and spices.

Purpose: Typically consumed with meals, particularly in regions like Gujarat and Rajasthan, for its digestive benefits.

In essence, lassi is a sweeter, thicker yogurt drink, while buttermilk is a thinner, often spiced version of the same base.

Drinking buttermilk every day has many health benefits.^[8-10]



Figure-2: Buttermilk.

Buttermilk

Digestion: Buttermilk is light on the stomach and helps in improving digestion. It's like a natural probiotic that balances your gut bacteria, making digestion smooth. Yes, buttermilk can be beneficial for the skin due to its lactic acid content and other nutrients. It can help exfoliate, moisturize, brighten, and even out skin tone. Buttermilk's lactic acid acts as a natural alpha-hydroxy acid (AHA), which can help remove dead skin cells and reveal fresher skin.

Digestive Benefits: Buttermilk is a good source of probiotics, which are beneficial bacteria for gut health.

Hydration: It's a hydrating beverage, making it suitable for hot weather or when you need a cooling effect.

Lower Calorie: Buttermilk is generally lower in calories compared to curd, making it a better choice for those watching their weight.

Lighter to Digest: According to Ayurveda, buttermilk is considered lighter and easier to digest than curd.

Curd

Protein Rich: Curd is a good source of protein, which is essential for muscle building and repair.

Nutrient Dense: It's rich in calcium, vitamin B12, and other essential nutrients.

Satiety: Curd can provide a feeling of fullness, making it a good snack option.

Gut Health: Like buttermilk, curd also contains probiotics, contributing to gut health.

Here's a more detailed look at how buttermilk can benefit the skin:

1. **Exfoliation:** Buttermilk's lactic acid helps gently exfoliate the skin, removing dead skin cells and revealing brighter, smoother skin underneath. This exfoliation can also help reduce the appearance of blemishes and improve overall skin texture.
2. **Moisturizing:** Buttermilk has moisturizing properties that can help hydrate the skin and make it softer and suppler. Regular use of buttermilk can help prevent dryness and improve the overall health of the skin.
3. **Brightening and Toning:** Buttermilk can help brighten the complexion and minimize imperfections. It can also help tone the skin, making it appear more even and radiant.
4. **Addressing Skin Concerns:** Buttermilk can be used to treat various skin concerns, including acne, scars, and dark spots. Its anti-inflammatory properties can help soothe irritated skin and reduce redness.
5. **Other Benefits:** Buttermilk is a good source of protein and calcium, which are important for skin health. Some commercially available buttermilk is also fortified with vitamins and minerals that further enhance its benefits for the skin.

How to use Buttermilk for Skin.

- **Buttermilk Face Mask:** Mix buttermilk with other ingredients like chickpea flour, turmeric, or oatmeal to create a face mask that can be applied to the skin.

- **Buttermilk Cleanser:** Use buttermilk as a natural face cleanser by applying it to the skin and gently washing it off.
- **Buttermilk Toner:** Apply buttermilk to the skin using a cotton pad to help tighten pores and improve skin tone.
- **Buttermilk Moisturizer:** Apply buttermilk to the skin to help moisturize and hydrate.
- **Buttermilk can help your body cool down** if you drink it twice daily or more frequently. To revive your energy and help your body naturally cool off, try drinking a glass of cold buttermilk.

Expiry date: Yogurt works best when substituted for buttermilk in a 1-to-1 ratio. That is, if a recipe calls for 1 cup buttermilk, you can simply replace it with 1 cup of plain yogurt. Just make sure you are using a liquid measuring cup. Buttermilk, when properly stored, can last for a few weeks in the refrigerator and even longer in the freezer. Unopened buttermilk can last for about 7-14 days past its expiration date when refrigerated, while opened buttermilk can last up to 14 days after opening. In the freezer, unopened buttermilk can last for up to 3 months, and opened buttermilk can also be frozen for up to 3 months.

Refrigerated (Unopened)

General Shelf Life: Buttermilk has a longer shelf life than regular milk because it's fermented.

After Expiration: Unopened buttermilk can still be safe to consume for a week or two past its expiration date, especially if it's been refrigerated properly.

Refrigerated (Opened)

Ideal Use: Opened buttermilk is best used within 7-14 days of opening, depending on how it's been stored.

Frozen

Best Use: Buttermilk is generally best used within 3 months of freezing.

Indefinite Storage: While it's best used within 3 months, properly frozen buttermilk can keep indefinitely.

Tips for Extending Shelf Life: Proper Storage: Keep buttermilk refrigerated at or below 40°F (4.4°C). Use in

Cooking: If buttermilk has a slightly sour taste or has thickened, it can still be used for baking or meat tenderizing, which depend on its acidity.

Freeze for Later: You can freeze buttermilk in ice cube trays or containers for future use in pancakes, waffles, or other dishes.

When to Toss

Mold: If you see any mold, it's time to discard the buttermilk.

Unpleasant Smell: If the buttermilk smells strongly sour or funky, it's best to throw it away.

Chunky Texture: If the buttermilk is chunky and you can't pour it, it's likely spoiled.

Both curd (yogurt) and buttermilk are healthy choices, but they offer different benefits. Buttermilk is generally considered lighter and easier to digest, making it a better option for those seeking a cooling and hydrating beverage, especially in hot weather. Curd, on the other hand, is higher in protein and fat, making it a good source of nutrients and a satisfying snack for those with more calorie needs or who want a longer-lasting feeling of fullness.

Which is better?

For digestion and cooling: Buttermilk is generally preferred due to its lighter nature and cooling effects.

For protein and satiety: Curd is a better choice for those seeking a protein-rich snack that keeps them feeling full.

For weight management: Buttermilk's lower calorie content makes it a more suitable option for weight loss.

For those with fluid restrictions

Curd is suitable for individuals on fluid-restricted diets due to its lower fluid content. Ultimately, the best choice depends on individual needs and preferences.

Buttermilk can help reduce gas and bloating. The beneficial bacteria, or probiotics, in buttermilk support gut health and aid digestion, potentially reducing digestive issues like gas and bloating. Buttermilk can also help neutralize stomach acid, which can contribute to gas and bloating. Yes, it's generally safe and even beneficial to drink buttermilk at night. Buttermilk is generally safe for most people, but certain individuals should be cautious or avoid it. People with kidney problems, lactose intolerance, or those experiencing respiratory issues like asthma or cold should consider avoiding buttermilk or consulting with a healthcare professional.

CONCLUSION

In a nutshell, the health benefits of buttermilk are too many to ignore. From aiding digestion and boosting immunity to promoting weight loss and enhancing skin health, its nutritional profile makes it a valuable addition to your daily diet, offering both refreshment and wellness. If your metabolism is not strong enough, drink a glass of buttermilk every day.

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