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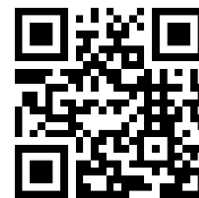


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PROBIOTICS AND PREBIOTICS IN CURD AND BUTTERMILK - KEY TO AYURVEDIC GUT HEALTH

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ABSTRACT:

In Ayurveda, gut health is fundamental to overall well-being, with the digestive fire (Agni) playing a central role in balancing the body's three doshas—Vata, Pitta, and Kapha. Curd (Dadhi) and buttermilk (Takra) are ancient dietary staples used to enhance digestion, balance the doshas, and promote gut health. Rich in probiotics and prebiotics, these fermented dairy products contribute to a healthy gut microbiome, supporting digestion, immune function, and mental health. This paper reviews the role of curd and buttermilk in Ayurvedic practices and modern microbiological research, highlighting their synergistic effects on gut health.

KEYWORDS: Probiotics, Prebiotics, Curd, Buttermilk, Microbiome, Ayurveda

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INTRODUCTION:**Ayurvedic Perspective on Gut Health:**

Ayurveda regards the digestive system as the body's foundation, with *Agni* (digestive fire) responsible for the transformation of food into energy and nutrients. Curd and buttermilk have long been valued for their role in enhancing digestion, balancing the doshas, and preventing the buildup of toxins (*Ama*) that lead to disease. Their probiotic and prebiotic content supports a healthy gut microbiome, which is central to both ancient and modern approaches to digestive health.

Modern Understanding of the Gut Microbiome (Development of Microflora):

The GI tract is essentially sterile at the time of birth and bacterial colonization begins upon exposure to the environment. Progression of colonization is initially fast, followed by a gradual process of modification over the first few years of life. As the baby passes through the birth canal bifidobacterium and *Lactobacillus* are typically acquired and rapid colonization of mainly enterobacteria occurs. In recent years, there has been a surge of interest in the human gut microbiome—a complex ecosystem of bacteria, viruses, fungi, and protozoa. Most of these are harmless to us called commensals. In the lower intestine alone, there are estimated to be up to 10^{12} bacteria contents. Each human being possesses a distinct spectrum of microorganisms. Research has shown that a balanced gut microbiota is essential for immune function, digestion, and even mental health, aligning with Ayurvedic concepts that emphasize the importance of maintaining a healthy gut. Probiotic-rich foods like curd and buttermilk introduce beneficial bacteria, which help to balance the gut microbiome, reduce inflammation, and improve overall health while the benefits of probiotics and prebiotics in curd and buttermilk are well-recognized in both Ayurveda and modern science, there is a need for more

comprehensive research that bridges these two perspectives. This study aims to explore the synergies between Ayurveda and modern microbiology, demonstrating how curd and buttermilk contribute to gut health and overall well-being.

Lactobacillus: It is a genus of rod-shaped, gram-positive, non-spore-forming, facultative anaerobic bacteria of the phylum 'Firmicutes'. *Lactobacilli* metabolise carbohydrates to produce lactic acid making them the largest genus within the lactic acid bacteria (LAB) group. *Lactobacillus* is a genus of beneficial bacteria that acts as a probiotic by helping maintain and restore a healthy balance of gut flora, which plays a crucial role in digestion, immune function and overall well-being. Probiotics and prebiotics are both crucial for maintaining a healthy gut, but they serve different roles:

Probiotics: They are live microorganisms that provide beneficial effects on the gut by enhancing the natural bacterial population in the digestive system. These microorganisms include strains of beneficial bacteria such as *Lactobacillus* and *Bifidobacterium*. which are prevalent in fermented dairy products like curd and buttermilk. Consuming probiotic-rich foods helps and maintain a healthy balance of gut bacteria.

Common Sources- curd, buttermilk, kefir, sauerkraut, kimchi, miso, kombucha, and other fermented foods.

Benefits-

- 1) Enhance digestion and nutrient absorption.
- 2) Boost immune function.
- 3) Reduce the risk of certain digestive disorders, such as irritable bowel syndrome (IBS).
- 4) Support mental health by influencing the gut-brain axis.

Prebiotics: They serve as the food source for these good bacteria, promoting their growth and activity in the gut. Together, they create a good environment that supports digestive

wellness, improves nutrient absorption, and enhances immune function.

Prebiotics - Nourishing the Gut Flora: While probiotics often receive much attention for their health benefits, **prebiotics** are equally important. Prebiotics in curd and buttermilk primarily come from the non-digestible fibers and compounds present in milk, such as lactose, which can act as a food source for probiotic bacteria. By consuming prebiotic-rich foods, individuals enhance the growth of good bacteria in the gut, ensuring that the probiotics introduced through curd and buttermilk thrive and multiply. In Ayurvedic terms, prebiotics support the cultivation of a healthy Agni by promoting the growth of healthy bacteria that aid in the breakdown of complex foods, improving nutrient absorption and ensuring that toxins are effectively removed from the body. This process is essential for maintaining the balance of Kapha dosha, as it prevents the buildup of mucus, which can result in sluggish digestion and metabolic stagnation.

Common Sources- Garlic, onions, leeks, asparagus, bananas, whole grains, chicory root, and artichokes.

Benefits-

- 1) Improve digestion and gut health by supporting probiotic growth.
- 2) Help with calcium absorption and may enhance bone health.
- 3) Improve metabolic health and support weight management.
- 4) Reduce inflammation in the body.

Objective:

- To examine the properties of curd and buttermilk as probiotic-rich foods.
- To bridge Ayurvedic concepts with modern clinical findings on gut health.

Ayurveda's View on Curd and Buttermilk:

1)Curd (Dhadhi in Ayurveda)

Definition: Curd (Dadhi): According to the Apte dictionary, curd is defined as "coagulated milk, thick sour milk." It refers to

fermented milk, which can be prepared at home or commercially. In Ayurveda, it is considered a food substance with medicinal properties, balancing or aggravating doshas depending on its preparation and consumption.

1. **Virya (Potency):** Curd has Ushna (hot) potency, which means it generates heat in the body. This heating effect can aggravate Pitta dosha, especially if consumed excessively or at inappropriate times.
2. **Vipaka (Post-digestive Effect):** The Vipaka (post-digestive effect) of curd is Amla (sour). This sour post-digestive effect impacts digestion and metabolism, generally increasing Pitta and Kapha doshas while reducing Vata dosha.
3. **Guna (Qualities):** Curd is Guru (heavy)- it is difficult to digest. It is also Snigdha (unctuous)- providing moisture and lubrication to tissues. Grahi (binding) is another quality of curd, which helps in binding stools, making it useful in controlling diarrhea but may lead to constipation if overconsumed.

Effects on Doshas:

Increases: Pitta and Kapha doshas.
Decreases: Vata dosha when used appropriately.

Rules For consumption of Curd (Dadhi): In Ayurveda, curd is generally contraindicated for regular use due to its potential to disturb bodily balance, especially when consumed at night, as it increases *Kapha* and can cause health issues. It is best consumed with safe combinations like green gram soup, *Amalaki*, honey, salt, or sugar, and should never be heated. Ayurveda advises consuming curd during cooler seasons (late winter, rainy, and early winter) and avoiding it in warmer seasons (summer, autumn, and spring). It is contraindicated for individuals with *Kapha*, *Pitta*, and blood disorders, and misuse may lead to ailments such as fever, skin issues, and dizziness. Current practices, such as

eating curd at night or in contraindicated seasons, contradict Ayurvedic principle.

Buttermilk (Takra): Takra, or buttermilk, is a powerful medicinal food in Ayurveda, known for its ability to stimulate digestion (*Agni deepak*), improve appetite, and treat digestive issues. Regular intake is recommended in classical texts like *Bhavprakash Samhita*, where it is praised as "nectar on earth." Takra is particularly beneficial for conditions like *arsha* (hemorrhoids) and is advised during the winter season in Ayurveda. However, it is commonly consumed in summer today. Proper preparation and knowledge of its health benefits are essential for incorporating Takra into the diet, especially for improving digestion. Ancient texts like *Charak Samhita* offer detailed methods of preparing Takra and its effects on the body. Given the rise in digestive problems due to modern lifestyles, understanding the correct preparation and use of Takra is vital for maintaining good health.

Eight Important Characteristics of Takra as Per Ayurveda: Takra offers multiple health benefits in Ayurveda. It improves appetite (*Kshut Vardhana*), relieves eye disorders (*Netra Rujapaha*), and is life-giving (*Prana Pada*). It helps in blood and muscle nourishment (*Shonita Mamsada*), removes toxins (*Amahara*), and aids in trauma recovery (*Abhighatahara*). Additionally, it pacifies both *Kapha* and *Vata* doshas, making it a versatile remedy for various health conditions.

Guna Karma of Takra (Buttermilk): In Ayurvedic texts, Takra (buttermilk) is described with varying properties. According to *Charak Samhita* and *Ashtang Sangrah*, its primary taste is *Kashay Amla* (astringent-sour), while *Sushrut Samhita* mentions *Madhur Amla* (sweet-sour), and *Bhavprakash* describes it as *Kashay Madhur* (astringent-sweet). The *Gunas* (qualities) include *Deepan*

(digestive stimulant) and *Laghu* (light) in *Charak* and *Laghu, Ruksha* (dry) in *Sushrut*. All agree on its *Ushna Virya* (heating potency) and *Madhur Vipak* (sweet post-digestion effect). These properties make Takra beneficial for digestion and balancing doshas. In Ayurveda, curd and buttermilk are prescribed for their ability to balance *Pitta* and *Kapha* doshas, stimulate digestive fire, and alleviate digestive disorders. Curd is considered *Guru* (heavy) and *Snigdha* (unctuous), while buttermilk is lighter and easier to digest. Ayurvedic texts such as *Charaka Samhita* and *Sushruta Samhita* emphasize the use of these fermented products in treating conditions like diarrhea, bloating, and indigestion.

The Ayurvedic Approach to Digestive Health: From an Ayurvedic standpoint, every food carries a specific energy or *guna* that affects the body's doshas and *Agni*. Curd is considered to have a sour taste with a heavy, heating nature, which makes it beneficial for balancing *Vata* and *Kapha* but may aggravate *Pitta* if consumed in excess or improperly. Therefore, Ayurveda advises consuming curd during the day when the digestive fire is stronger, and in moderation, especially for individuals with a predominant *Pitta* constitution. On the other hand, buttermilk is seen as a lighter, more easily digestible alternative to curd, and is lauded for its ability to alleviate digestive disorders. In fact, buttermilk is a cornerstone of Takra therapy in Ayurveda, where it is used to treat gastrointestinal problems like ulcers, IBS, and indigestion. The combination of probiotics and prebiotics in buttermilk makes it an ideal remedy for those seeking to pacify aggravated *Pitta* and *Kapha* doshas, especially in hot climates or after meals that are heavy in fats or proteins.

Modern Science Meets Ayurveda: In recent years, there has been growing scientific interest in the role of probiotics and

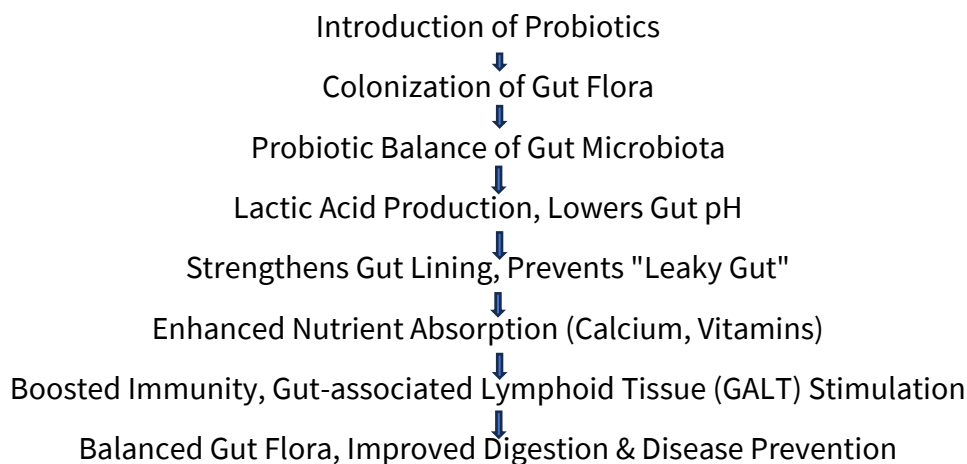
prebiotics in maintaining gut health. Studies have shown that fermented dairy products like curd and buttermilk can reduce inflammation, lower cholesterol, and improve immune function by promoting the

growth of beneficial gut bacteria. This aligns with Ayurvedic principles that advocate the consumption of fermented foods to balance digestive energies and enhance overall vitality.

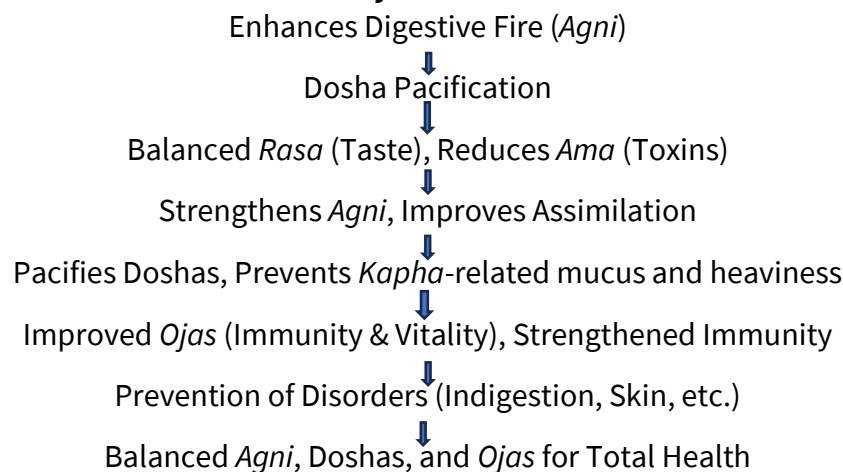
DISCUSSION:

Consumption of Curd/Buttermilk

Modern Science:



Ayurveda:



Modern Microbiome Research on Fermented Foods: Scientific research has established the importance of probiotics and prebiotics in maintaining a balanced gut microbiome. Curd and buttermilk contain beneficial bacterial strains like *Lactobacillus acidophilus*, *Bifidobacterium*, and *Streptococcus thermophilus*, which help regulate bowel movements, improve nutrient absorption, and support immune function. Additionally, prebiotic fibers in these foods

provide nourishment for probiotic bacteria, ensuring their growth and activity.

Probiotic and Prebiotic Content in Curd and Buttermilk: Curd and buttermilk are rich in probiotics, specifically strains of *Lactobacillus acidophilus*, *Lactococcus lactis*, and *Bifidobacterium*. These microorganisms play a key role in maintaining the gut's microbial balance, enhancing digestion, and boosting immunity.

| Component | Curd | Buttermilk |
|-----------------|---|--|
| Probiotics | <i>Lactobacillus acidophilus</i> , <i>Streptococcus thermophilus</i> | <i>Lactococcus lactis</i> , <i>Lactobacillus</i> species |
| Prebiotics | Lactose, non-digestible fibers | Lactose |
| Health Benefits | Boosts immune function, aids digestion | Alleviates bloating, supports gut flora |

Synergy between Probiotics and Prebiotics in Curd and Buttermilk:

| Stages of Microflora Development | Ayurvedic Perspective | Modern Scientific Findings |
|----------------------------------|---|---|
| Infancy | <i>Bifidobacteria</i> from mother's milk | Rapid colonization by <i>Bifidobacteria</i> and <i>Lactobacilli</i> |
| Adulthood | Balanced <i>agni</i> sustains healthy gut flora | Diverse microbiota supports immune and digestive function |

The synergy between probiotics and prebiotics in curd and buttermilk creates an environment conducive to gut health. In Ayurvedic terms, this synergy supports the digestive fire (*Agni*) and prevents the buildup of toxins (*Ama*). From a modern perspective, the prebiotic fibers in these foods act as nourishment for probiotics, ensuring their proliferation and enhancing their ability to maintain gut health.

Microbiome, Gut Health, and Immune Function: Modern science demonstrates that probiotics in fermented foods like curd and buttermilk enhance immune function by promoting a balanced gut microbiome. The gut's role in immune regulation, particularly through the production of short-chain fatty acids (SCFAs) by probiotic bacteria, aligns with Ayurvedic principles that emphasize the role of *agni* in supporting immunity.

Curd and buttermilk in the treatment of digestive Disorders: Both Ayurveda and modern medicine recognize the therapeutic benefits of curd and buttermilk in treating digestive disorders. In Ayurveda, buttermilk is prescribed for conditions like bloating and indigestion, while curd is recommended to stimulate appetite and improve nutrient

absorption. Modern research shows that the probiotics in these foods help restore gut flora after antibiotic treatments and improve symptoms of IBS and lactose intolerance.

CONCLUSION:

The combined benefits of probiotics and prebiotics in curd and buttermilk are essential for maintaining a healthy gut microbiome. Their ability to support digestion, boost immunity, and balance doshas aligns with both Ayurvedic principles and modern scientific findings. Regular consumption of curd and buttermilk, according to Ayurveda principle, can enhance gut health, prevent digestive disorders and overall well-being.

REFERENCES:

- 1) <https://www.sciencedirect.com/topics/immunology-and-microbiology/bacterial-flora>
- 2) <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6463098/>
- 3) Agnivesh, Charaka samhita, Vimansathan chapter 1 verse 21, edited by Sharma Y. T., Chaukhambha Orientalia, Varanasi. 1st edition pg no.235
- 4) Sushruta, Sushruta samhita, Uttartantra, Chapter 65 verse 56, edited by Sharma Y. T., Chaukhambha Orientalia, Varanasi. 1st edition pg no.812

- 5) Agnivesh, Charaka samhita, Sutrasthan chapter 27, edited by Sharma Y. T., Chaukhamba Orientalia, Varanasi. 1st edition pg no.189
- 6) Bhava Prakash Nighantu, Bhavamishra and Chuneekar K. C., Hindi Comm., Chaukhamba Bharati Academy, Varanasi, 1988,15
- 7) Agnivesh, Charaka samhita, Sutrasthan chapter 7 verse 61- 62, edited by Sharma Y. T., Chaukhamba Orientalia, Varanasi. 1st edition pg no.235.
- 8) Vagbhat's, Ashtang Hruday, Sarvangsundarteeka, Sutrasthan, chapter 5 verse 29-33, edited by Paradkar H. S., Chaukhamba Orientalia, Varanasi, 1st ed., pg. No. 70.
- 9) Sushruta, Sushruta samhita, Sutrasthan, chapter 45 verse 69- 83, edited by Sharma Y. T., Chaukhamba Orientalia, Varanasi. 1st edition pg no.202
- 10) Sushruta, Sushruta samhita, Sutrasthan, chapter 45 verse 65- 66, edited by Sharma Y. T., Chaukhamba Orientalia, Varanasi. 1st edition pg no.202
- 11) Sushruta, Sushruta samhita, Sutrasthan, chapter 45 verse 67- 78, edited by Sharma Y. T., Chaukhamba Orientalia, Varanasi. 1st edition pg no.202 *
- 12) Vd. Shri Lakshmi Pati Shashtri, Yogratanakara, with commentary by Vidyotani, Chaukhamba Sanskrit Samsthan, Varanasi, Reprint 2007, Page No. 81
- 13) Agnivesa: Charak Samhita: Rev. by Charak and Dradhabala with commentary by Cakrapanidatta: Chaukhamba Sanskrit Samsthana: Varanasi, sutra Sthana chapter 27.
- 14) Prof. Priyavat Sharma, Kaiyadev Nighantu, Chaukhamba Orientalia, 1st Edition, Chapter Dhanya Varga Page No. 308
- 15) K. R Shrikantmurthy, Bhavprakash, Takravarga, 2nd Edition, Krishnadas Academy, Varanasi, 2002
- 16) Prof. Priyavat Sharma, Dhanvantari Nighantu, Chaukhamba Prakashan, 1st Edition 2009
- 17) Agnivesa: Charak Samhita: Rev. by Charak And Dradhabala With Commentary by Cakrapanidatta: Chaukhamba Sanskrit Samsthana: Varanasi, Sutra Sthana Chapter 27.
- 18) Dr. Bramhanad Tripathi Chaukhamba - Astanga Hridayam of Srimadvagbhata Edited with Nirmala Int. J. Ayur. Pharma Research, 2022;10(3):113-118 Available online at: <http://ijapr.in> 118 By Sanskrit Pratishtan, Edition - 2003, Sutrasthan 5
- 19) Agnivesa: Charak Samhita: Rev. By Charak And Dradhabala with Commentary by Cakrapanidatta: Chaukhamba Sanskrit Samsthana: Varanasi, Chikitsaa Sthana Chapter 13.
- 20) Agnivesa: Charak Samhita: Rev. By Charak And Dradhabala with Commentary by Cakrapanidatta: Chaukhamba Sanskrit Samsthana: Varanasi, Sutra Sthana Chapter 27.
- 21) Susruta: Susruta Samhita: With Commentaries Nibandhasamgraha by Dalhana and Nyayacandrika by Gayadasa: Chaukhamba Orientalia, Varanasi: 5th Ed. (Reprint 1992), Sutra Sthana Chapter 14/14
- 22) Susruta: Susruta Samhita: With Commentaries Nibandhasamgraha by Dalhana and Nyayacandrika by Gayadasa: Chaukhamba Orientalia, Varanasi: 5th Ed. (Reprint 1992), Sutra Sthana Chapter 14/14

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