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Dahi: The Probiotic Powerhouse of India's Staple Diet

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Abstract

Dahi is a widely consumed traditional fermented milk product of the Indian subcontinent, with its origins dating to 1500–1000 BC. It is comparable to yogurt and is produced by fermenting cow, buffalo, or goat milk with mesophilic lactic acid bacteria, including *Lactococcus lactis* subspecies along with *Streptococcus* and *Lactobacillus* cultures. Dahi has long been valued in Ayurveda for its digestive and antimicrobial properties and has traditionally been used to manage diarrhea and gastrointestinal disorders. In recent years, it has gained recognition as an effective probiotic food. LAB involved in dahi fermentation produce lactic acid and a range of bioactive compounds, like bioactive peptides, bacteriocins, exopolysaccharides, vitamins, short-chain fatty acids (SCFAs), and γ-aminobutyric acid (GABA). These compounds contribute to improved digestion, immune modulation, cholesterol reduction, antimicrobial activity, and antioxidant effects. Due to its nutritional, functional, and therapeutic attributes, dahi serves as an excellent carrier of probiotics and represents a valuable functional fermented dairy product.

Introduction: Dahi is a traditional and widely consumed Indian fermented dairy food. The introduction of milk products such as dahi and ghee to the Indian subcontinent is commonly attributed to Aryan-speaking populations who migrated to the region between 1500 and 1000 BC. Milk and dairy products are consumed across all age groups and are essential components of human nutrition throughout the lifespan. Dahi, a fermented dairy product resembling yogurt in appearance, is widely consumed in the Indian subcontinent. It is traditionally produced by fermenting cow, buffalo, or goat milk using mesophilic lactic acid bacteria, mainly *Lactococcus lactis* subsp. *lactis*, *Lactococcus lactis* subsp. *diacetylactis*, and *Lactococcus lactis* subsp. *cremoris*.

According to traditional Indian medicine (Ayurveda), dahi promotes health and well-being due to its antimicrobial activity against pathogenic microorganisms and its role in improving digestion and nutrient absorption. Therefore, the present study investigates traditionally produced Indian fermented milk curd as a probiotic food with potential health benefits. Historically, dahi has been recommended for the management of diarrhea and other acute and chronic gastrointestinal disorders.

Probiotics are defined as "live microorganisms which, when administered in adequate amounts, confer a health benefit on the host." These beneficial bacteria and yeasts play an important role in maintaining gut health and overall physiological balance. Although microorganisms are often associated with disease, the human body harbors a complex microbial ecosystem comprising both beneficial and harmful microbes. Probiotics, commonly referred to as "good" or "beneficial" bacteria, support the maintenance of intestinal microbial equilibrium and promote digestive health. They are commonly consumed through fermented foods containing active live cultures, such as dahi, or in the form of dietary supplements.

Fermented dairy products are associated with improved health outcomes. Fermented food are utilizing from centuries as the method of food preservation. Dahi is considered an excellent carrier of probiotics,

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and extensive research has been conducted on its potential therapeutic effects when enriched with probiotic bacteria. *Streptococcus lactis*, *Streptococcus cremoris*, *Streptococcus diacetylactis*, Lactobacillus such as *Lactobacillus bulgaricus*, *Lactobacillus acidophilus*, and *L. casei* & *Streptococcus thermophiles* are some of the culture used in large scale production of dahi. Due to their increased acid resistance, lactobacilli dominate in sour dahi, whereas streptococci dominate in sweet dahi.

Lactic acid bacteria (LAB) are a group of beneficial microorganisms that produce lactic acid during the fermentation process. Due to the synthesis of various metabolites, LAB are extensively used in curd manufacture and play a vital role in the development of flavor, color, and texture of the final product. In addition, LAB produce antimicrobial compounds that inhibit pathogenic and food-spoilage microorganisms. Numerous studies have demonstrated the beneficial effects of lactic acid bacteria on human health, including their role in the prevention and management of various diseases.

Bioactive Compounds in Probiotic Yogurt

Lactic acid bacteria (LAB) are integral to the yogurt fermentation process and are responsible for the production of a wide range of bioactive compounds that contribute to its health-promoting properties. These bioactive components include peptides, exopolysaccharides (EPS), bacteriocins, vitamins, and other metabolites, which collectively enhance the nutritional and functional quality of yogurt. The production of these compounds is influenced by the specific LAB strains used and fermentation parameters such as temperature, pH, and duration (Chakma et al., 2025).

Regular consumption of an adequate amount of curd in the diet has been associated with several health benefits:

1. It provides protection against *Helicobacter pylori* infection and enhances immune function.
2. It improves digestion, particularly gastric digestion, helps reduce blood pressure and low-density lipoprotein (LDL) cholesterol levels, and lowers the risk of coronary heart disease.
3. It aids in the prevention of infections, osteoporosis, and disorders related to the female reproductive system.
4. LAB produce antimicrobial compounds such as organic acids, bacteriocins, diacetyl, and hydrogen peroxide, which act as natural preservatives and inhibit the growth of harmful putrefactive microorganisms.
5. LAB can synthesize vitamins, short-chain fatty acids, and bacteriocins, suppress pathogenic microorganisms, and help maintain a balanced gut microbiota.
6. LAB enhance digestion and improve nutrient absorption, particularly of dietary proteins.
7. LAB can reduce the allergenic potential of certain foods, such as dairy and wheat, by degrading specific allergenic proteins.
8. Some LAB strains produce antioxidant compounds that help neutralize harmful free radicals.
9. Certain LAB strains synthesize γ-aminobutyric acid (GABA), a bioactive neurotransmitter that contributes to blood pressure regulation, muscle relaxation, and reduction of psychological stress (Das

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et al., 2019).

Conclusion

Lactic acid bacteria have long been essential to human food systems, contributing significantly to fermentation processes, flavor formation, and food preservation. Beyond their significant economic value, LAB contribute substantially to the promotion and maintenance of human health. They represent a positive and beneficial aspect of the microbial world, deserving recognition for their vital role in nutrition, health, and traditional cuisine.

Place	Name
Kannada	Mosaru
Tamil	Thayir
Assamese,Bengali	Doi
Oriya	Dohi
Telegu	Perugu
Sindhi marathi	Dhahi
Hindi /Punjabi	Dahi

Table 1: Dahi (curd) has various regional names across India

Components	Whole milk Dahi (%)	Skim milk Dahi (%)
Water	85-88	90-91
Fat	5 – 8 0 .	05 - 0.1
protein	3.2-3.4	3.3-3.5
Lactose	4.6-5.2	4.7-5.3
LA	0.5-1.1	0.5-1.1
Ash	0.7-0.75	0,7-0.75

Table 2: Chemical composition of Dahi

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Therapeutic properties of Dahi/Curd

- In the treatment of AIDS
- In the treatment of cancer.
- In the treatment of insomnia.
- In the treatment of diabetes &
- Improvement of lipid profile
- In the treatment of liver diseases
- Antiallergic effect.

Milind & joyti (2014) , Mudgal & prajapati (2017)

Table 3: Therapeutic properties of Dahi

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