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Nutritional Benefits of Panchamrut: A Review

Dr. Shilpa Deshpande
Assistant Professor (Home Science),
Chishtiya College of Arts,Science and Commerce,Khuldabad.
Corresponding Author - Dr. Shilpa Deshpande

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Abstract:

Panchamrut, also known as Panchamrit, is a traditional Indian preparation made from five primary ingredients: milk, curd (yogurt), ghee (clarified butter), honey, and sugar (or jaggery). It holds immense cultural and spiritual significance, being widely used in Hindu rituals and distributed as prasada after religious ceremonies. Beyond its ritualistic importance, Panchamrut is a unique blend of nutrients that combine proteins, fats, carbohydrates, vitamins, minerals, probiotics, and bioactive compounds in a small volume. This review paper systematically analyzes the nutritional contributions of each ingredient, evaluates their synergistic effects, discusses potential health benefits and safety concerns, and highlights Panchamrut's relevance in modern dietary contexts. Evidence indicates that Panchamrut can contribute to improved gut health, bone strength, immune support, and antioxidant defence, provided it when consumed in moderation. However, excessive intake poses risks related to added sugars and saturated fats. By integrating traditional knowledge with scientific perspectives, Panchamrut can be appreciated as both a sacred offering and a functional food.

Keywords: Panchamrut, Panchamrit, milk, curd, ghee, honey, sugar, probiotics, nutrition, functional food.

Introduction:

Food has always held both physiological and symbolic roles in human societies. In Indian culture, Panchamrut occupies a unique place as a preparation that is simultaneously sacred and nourishing. The word *Panchamrut* is derived from Sanskrit, where *panch* means five and *amrut* denotes nectar or elixir.**1** Together, Panchamrut refers to the "nectar of five ingredients," a symbolic blend believed to purify and energize both body and mind. During Hindu rituals such as *abhisheka* (anointing deities), weddings, and other religious ceremonies it is mainly used.

While most people associate Panchamrut primarily with spirituality, its five core ingredients make it a nutritionally rich formulation. Each component milk, curd, ghee, honey, and sugar contributes distinct nutrients and bioactive compounds. When combined, they create a food matrix that supports energy provision, digestion, immunity, and overall well-being. The objective of this review paper is to analyse the nutritional profile of Panchamrut, evaluate its

potential health benefits, and discuss modern perspectives on its consumption.

Composition and Variations:

The canonical recipe mixes equal or similar parts of the five ingredients; practical recipes vary by region and context (some add cardamom, tulsi, or dry fruits; sugar may be replaced with jaggery). For nutrition analysis, the consistent core remains the five ingredients named above.

Typical ceremonial portion size:

1–3 tablespoons (≈15–45 mL). At this portion, total energy largely reflects the honey, sugar fraction and the ghee content; protein and calcium derive from milk/curd; micronutrients include fat-soluble vitamins (A, D, E, and K) from ghee and trace antioxidants from honey.

Nutritional Profile of Individual Ingredients:

1. Milk (cow's milk):

Cow's milk provides high-quality protein (casein and whey), lactose, calcium, phosphorus, riboflavin, vitamin B12, and iodine. Per the Indian Food Composition Tables (IFCT, 2017), 100 g of cow's milk (~97–67 kcal depending on fat level) supplies ~3.1 g protein, ~4.4–5 g fat (full-fat), ~4.4–5 g lactose, and ~120 mg calcium (values vary by fat content). These data make milk a cornerstone for bone health and muscle protein synthesis.**2**

2. Curd (dahi, yogurt):

Curd contributes many of milk's nutrients while also delivering live lactic acid bacteria (LAB), chiefly *Lactobacillus* spp. and *Streptococcus thermophiles*, which can support gut microbial balance. Systematic and narrative reviews associate fermented dairy with benefits to digestive function and potential metabolic advantages beyond non-fermented milk (e.g., improved lactose tolerance, possible blood pressure and bone benefits). The probiotic potential of LAB in curd is well described in microbiological literature, including protective effects of the dairy matrix on bacterial survival. **3**

3. Ghee (clarified butter):

Ghee is nearly pure milk fat with a high smoke point and negligible lactose/casein. It delivers fat-soluble vitamins (A, D, E, and K) and contains butyrate and other short-chain fatty acids. Contemporary reviews note that ghee provides measurable fat-soluble vitamin content and emerging data around lipid effects; as with other saturated-fat-rich foods, moderation is advised, particularly for individuals with dyslipidaemia. **4**

4. Honey:

Honey is a supersaturated sugar solution mainly made up of fructose and glucose enriched with trace enzymes, amino acids, minerals and a diverse array of polyphenols and flavonoids. (e.g. Gallic acid,caffeic acid,quercetin,kaempferol).**5** Clinical and mechanistic reviews report antioxidant anti-microbial anti-inflammatory and wound healing properties of honey some trial suggest modest improvement in lipids and inflammatory markers when Honey replaces sucrose though effects very from dose and population. Glycaemic index of honey is generally lower than that of table

sugar but still contributes meaning full free sugar and calories.**6**

5. Sugar (or Jaggery):

Refined sugar contributes rapid glucose; jaggery adds minute quantities of minerals but is nutritionally similar regarding sugars and energy. Current dietary guidelines emphasize limiting added sugar to reduce risk of obesity, type 2 diabetes, and dental caries. Thus, while sugar is integral to the traditional recipe, portion control is crucial for health.

Matrix Effects: Why the Mixture Matters:

The combination of dairy proteins/carbohydrates (milk, curd), structured fat (ghee), and honey/sugar creates a food matrix with several plausible interactions:

- **Enhanced absorption of fat-soluble vitamins:** Ghee's lipid matrix carries vitamins A, D, E, and K, and may aid absorption of fat-soluble antioxidants present elsewhere in the diet when Panchamrit is consumed.
- **Attenuation of glycaemic response via fat/protein:** Fat and protein can slow gastric emptying and reduce postprandial glucose excursions compared with sugars alone; honey's slightly lower GI than sucrose may add a marginal benefit, though clinically the difference is small and portion-dependent. **7**
- **Probiotic delivery:** Freshly cultured curd provides live LAB that reach the gut within a dairy matrix that supports viability, potentially offering digestive benefits.

Potential Health Benefits:

1. Gut and Digestive Health:

- **Probiotics from curd:** LAB in fermented milk products can support gut barrier function and microbial diversity, with reported benefits for lactose digestion and some gastrointestinal conditions.**3**
- **Honey's prebiotic and antimicrobial effects:** Honey contains oligosaccharides and exhibits antibacterial activity in vitro and in some clinical contexts (notably wound care); prebiotic actions may favour beneficial bacteria. **7**
- **Soothing matrix:** The emulsion of fat and dairy proteins may be better tolerated than hypertonic sugar solutions alone for some individuals, though robust Panchamrit-specific trials are lacking.

2. Micronutrient Support:

- **Calcium, B vitamins, iodine** from milk/curd support bone health and metabolic functions.
- **Fat-soluble vitamins** from ghee (vitamins A, D, E, and K) contribute to vision, immunity, and antoxidative defence.
- **Polyphenols** in honey add antioxidant capacity; darker honeys generally have higher phenolic content.

3. Energy and Satiety:

Panchamrit is energy-dense due to sugars and fat, offering quick calories—useful in small ritual servings but

counterproductive in large amounts for people with weight or glycaemic concerns. The presence of fat and protein may modestly increase satiety compared with sugars alone.

4. Cardio Metabolic Markers:

Evidence is mixed and ingredient-dependent:

- **Honey vs. Sucrose:** Some small studies report improvements in total cholesterol and inflammatory markers when honey substitutes for sugar; however, honey remains an "added sugar," and overall intake should still be limited.**9**
- **Ghee and Lipids:** Traditional and preliminary clinical observations vary; modern guidance typically recommends moderating ghee within total saturated fat limits, especially for those with dyslipidaemia.

5. Bone and Dental Health:

Milk and curd are excellent sources of calcium and phosphorus, essential for strong bones and teeth. The presence of fat in ghee aids in the absorption of vitamin D, which regulates calcium metabolism.

6. Cognitive and Psychological Benefits:

Ayurveda texts describe Panchamrut as beneficial for memory, concentration, and calming the mind. Modern science supports this partly as ghee provides DHA (docosahexaenoic acid) precursors, essential for brain development, while the calming ritual of consuming Panchamrut may reduce stress.

Safety and Cautionary Notes:

1. **Added Sugars:** Even with honey's slightly lower GI than sucrose, Panchamrit contributes free sugars. National guidance advises limiting added sugars (for adults and children ≥2 years) and avoiding added sugars entirely for <2 years. Portion control (e.g., 15–30 mL) keeps intake modest.
2. **Infants and Honey:** Honey must not be given to infants <12 months due to the risk of infant botulism. This applies to Panchamrit unless honey is omitted though such modification departs from tradition.
3. **Lactose Intolerance and Milk Allergy:** Those with lactose intolerance may tolerate small amounts, especially if curd predominates, (fermentation reduces lactose). Individuals with cow-milk protein allergy should avoid Panchamrit. (General dairy guidance.)
4. **Dyslipidaemia and Saturated Fat:** Ghee is high in saturated fat; individuals with hypercholesterolemia or established cardiovascular disease should use sparingly, within personalized dietary advice.
5. **Hygiene and Microbial Quality:** Because Panchamrit is uncooked and dairy-based, ingredient freshness, pasteurization (for milk), and clean handling are essential to reduce contamination risk.

Practical Formulation Guidance:

Ingredient quality and proportions:

- Use pasteurized milk and fresh, cultured curd (set with known starter).
- Opt for minimal ghee in general consumption versions if cardio metabolic risk is a concern; retain small amounts for vitamin delivery and flavour.
- Prefer honey as the primary sweetener (for flavor and polyphenols) but keep total sugars low; if using jiggery, remember that mineral contribution is small relative to sugar load.

Portion size:

- For everyday dietary use (beyond ritual), ~15–30 mL (1–2 tbsp.) can capture sensory and symbolic value without excessive sugars/fats.

Timing and serving:

- Serve fresh and cool; prolonged storage can reduce probiotic viability and increase microbial risk.
- Consider spice additions (e.g., cardamom) for flavour; they may add trace phytonutrients without altering macronutrient load.

Illustrative Nutritional Estimate (Per Tablespoon-Scale Serving):

Because household recipes vary, a rough estimate for ~20 mL serving prepared with equal parts of the five ingredients might provide approximately:

- **Energy:** ~60–80 kcal (dominant contributors: honey/sugar and ghee)
- **Carbohydrates:** ~7–9 g (mostly free sugars)
- **Fat:** ~3–4 g (from ghee and milk fat)
- **Protein:** ~0.6–1.2 g (from milk/curd)
- **Calcium:** ~30–50 mg (from milk/curd)

Values are approximations derived from IFCT per-100 g data for each ingredient prorated by volume, and will vary with fat level of milk/curd and exact ratios.

Panchamrut in Cultural and Modern Context:

1. Religious and Ritual Significance:

Panchamrut is considered sacred and symbolizes purity, prosperity, and health. It is used in deity offerings and distributed as *prasada*. In spiritual traditions, it is believed to purify the mind and soul.

2. Modern Nutritional Perspective:

In modern nutrition, Panchamrut can be considered a functional food—a traditional preparation with physiological benefits beyond basic nutrition. When consumed in small amounts, it offers a concentrated source of bioactive compounds.

Panchamrit's health footprint is largely shaped by context of use. In temple or home rituals, servings are small and infrequent—minimizing added sugar burden while preserving tradition. When integrated into routine diets as a "health drink," the frequency and portion size can escalate sugars and saturated fat intake; careful moderation is key, aligned with contemporary dietary guidelines

Comparative Analysis with Other Functional Foods:

When compared to other traditional health drinks (e.g., turmeric milk, lassi), Panchamrut stands out for its unique combination of probiotics, fats, antioxidants, and quick energy sources. Unlike many modern beverages, it is minimally processed and nutrient-rich in small servings.

10. Limitations of the Evidence Base

Few controlled studies evaluate Panchamrit as a composite food. Most data are ingredient-centric, clinical and mechanistic evidence focusing on yogurt/curd (probiotics), ghee (fat-soluble vitamins and lipid effects), and honey (antioxidants, prebiotic/wound-healing properties). Extrapolating these findings to the Panchamrit matrix is biologically plausible but not definitively proven; rigorous trials comparing Panchamrit to matched-macro comparators would clarify glycaemic responses, microbiome changes, and cardio metabolic markers.**6**

Practical Takeaways:

1. **Nutrient density in a small volume:** Panchamrit concentrates quick energy, fat-soluble vitamins, dairy minerals/proteins, and live LAB (if curd is fresh).
2. **Portion and frequency matter:** Treat as a small, occasional food rather than a large daily beverage to align with sugar and saturated fat limits
3. **Population-specific cautions:**
   - Avoid for infants <12 months (honey).
   - Use sparingly in diabetes or hyperlipidaemia, tailoring to individual dietary plans.
4. **Quality and hygiene:** Use pasteurized milk, fresh cultured curd, and hygienic preparation.

Conclusion:

Panchamrit is a culturally significant, nutrient-bearing food that, in modest ritual servings, can contribute small amounts of high-quality dairy protein and calcium, fat-soluble vitamins delivered in a lipid matrix, and polyphenol-rich honey—alongside live LAB from curd when freshly prepared. From a modern nutrition standpoint, the principal risks arise from added sugars and saturated fat, which are manageable through small portions and sensible frequency. While high-quality Panchamrit-specific clinical trials are lacking, convergent evidence from its components supports plausible benefits for gut health, micronutrient delivery, and palatability/satiety. Optimizing Panchamrit thus means honoring tradition while applying contemporary dietary guidance: keep it fresh, small, and occasional, with attention to individual health needs. By respecting both cultural heritage and modern nutrition science, Panchamrut can be enjoyed as a sacred food that contributes to holistic well-being.

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