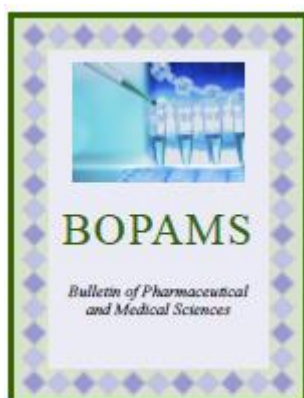


**TAKRA (BUTTERMILK): AN ELIXER OF EARTH**JYOTI BJ¹, KAVITA MB²¹Postgraduate Scholar, ²Associate ProfessorSri Dharmasthala Manjunatheshwara College of Ayurveda and Hospital, Thanniruhalla,
Hassan, Karnataka, India.**ABSTRACT**

Ayurveda, a science of life, has emphasized on proper diet and lifestyle for the promotion of health and prevention of diseases as well as curing the diseases. *Takra* (buttermilk), a dietary product obtained by churning curd, forms an integral part of a normal Indian diet. It can be used to maintain health as well to treat various conditions, kindle digestive fire, pacify *Tridosha* (three humors); when used with combination of different drugs, enhance its pacifying property and is a rich source of probiotics which provides necessary micronutrients to the body. In *Ayurveda* it has been told that "one who uses buttermilk daily does not suffer from any diseases, and diseases cured by buttermilk do not recur; just as divine nectar is for the Gods, buttermilk is to humans". This shows the importance of consumption of buttermilk in daily diet.

Key words: *Ayurveda*, *Takra*, *Buttermilk*, *Anupana*, *curd*, *nutraceutical*, *functional foods*

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INTRODUCTION

The science nutraceuticals deals with food or constituents of food that provide medical or health benefits including the prevention and treatment of diseases^[1]. *Ayurveda* a science of life has a great deal of emphasis on proper diet and lifestyle for the promotion of health and prevention of diseases as well as curing the diseases. Our body is the result of food and humans attain pleasure and sorrow (health and disease) because of wholesomeness and unwholesomeness of the diet they consume^[2]. The diseases can be cured without any medicine by just following wholesome food and regimen while, even hundreds of medicines cannot cure a disease in absence of them^[3]. No medicine is equivalent to food, it is possible to make a person disease free with mere proper diet^[4].

Food articles have been classified into different groups viz cereals, pulses, vegetables, fruits, milk & milk products and also described the qualities and effects of different foods on human body while describing about the food. *Takra* (buttermilk) is one among them which is grouped under *gorasa varga* (milk and milk products)^[5]. It is said that one who uses buttermilk daily does not suffer from any diseases, and diseases cured by buttermilk do not recur; just as divine nectar is for the Gods, buttermilk is to humans^[6]. This shows the importance of buttermilk in daily diet. It forms an integral part of a normal Indian diet. It is used to maintain health and to treat various disease conditions; it pacifies *tridosha* (three humors- *Vata*, *Pitta*, *Kapha*) and

provides necessary micronutrients to the body; kindles digestive fire thus prevents various diseases as *mandagni* (week digestive fire) is cause for all diseases.

General method of preparation of buttermilk: Buttermilk is prepared by churning the curd in a vessel by adding 1/4th or 1/2 parts of water. The fat called butter is separated. The liquid portion that is neither too thick nor too thin is considered as buttermilk^[7]. Churning causes the separation of cream (an oil-in water emulsion) into two distinct phases, an aqueous phase called buttermilk, and an oily phase or dairy fat concentrate (i.e., butterfat). This separation happens as a result of mechanical destabilization of the initial emulsion^[8]. Buttermilk is characterized by the existence of high amounts of residual milk fat globule membrane (MFGM). Intact MFGM is responsible for the stability, integrity and protection of milk fat in the aqueous phase of whole milk. Due to the churning process this membrane is finally destroyed. The compactly bound constituents of MFGM such as proteins, phospholipids, minerals etc are released during the process of churning. Some of these MFGM compounds are considered to be beneficial with regard to human health^[9].

Properties of buttermilk: It is of 2 types based on the taste viz., *madhura* and *amla* (sweet and sour) with *kashaya anurasa* (astringent in secondary taste); *laghu* (light), *ruksha* (dry) in nature; *ushna veerya* (hot in potency) and *madhura vipaka* (sweet at the end of digestion) and kindles the digestive power^[10]. Though it mainly acts on *kapha* and *vata* it is considered to pacify *tridosha*^[11]. Even though buttermilk is considered to pacify *tridosha*, it can be used with combination of different drugs to enhance its *dosha* pacifying property^[12].

- Increased *Vata Dosha* - Sour buttermilk + rock salt (*Saindhava*) OR Sour Buttermilk + dry ginger+ rock salt
- Increased *Pitta Dosha* – Sweet buttermilk + Sugar candy(*Sita*)
- Increased *Kapha Dosha* - Sweet buttermilk + Trikatu (*Shunti, Maricha, Pippali*) + Alkali(*Kshara*)

Types of Takra: Buttermilk has been classified into different types by different classical texts of *Ayurveda* based on fat content, water content and method of preparation. Based on fat content, buttermilk is classified into *Ruksha Takra* (Fat free), *Ardhodruta sneha Takra* (with partial fat), *Anudhruta sneha Takra* (Full Fat); these are to be administered based on nature of the *doshas* involved in causation of the disease, power of digestion and physical strength. Buttermilk with partial fat (1/2 Part) content is considered ordinary and the buttermilk entirely devoid of fat is light and wholesome^[13] [Table 1]. Depending upon the quantity of water to be added and method of preparation of buttermilk, is of five types viz. *ghola*, *mathita*, *takra*, *udashvita* and *chachika* these are light for digestion in ascending order^[14] [Table 2].

Table 1: Types of buttermilk based on Fat content

Type of buttermilk	Method of preparation	Indication
<i>Ruksha Takra</i>	Churned curd from which fat is completely removed	<i>Mandatama Agni</i> (poorest digestive capacity), <i>Adhama bala</i> (least body strength), increased <i>Kaphadosha</i>
<i>Ardhodruta sneha Takra</i>	Churned curd from which half of the fat is removed	<i>Mandatara Agni</i> (poorest digestive capacity), <i>Madhyama bala</i> (moderate strength), increased <i>Pitta dosha</i>
<i>Anudhruta sneha takra</i>	Churned curd from which fat is not at all removed	<i>Manda Agni</i> (poor digestive capacity), <i>Uttama bala</i> (strong body strength), increased <i>Vata dosha</i>

Table 2: Types of Buttermilk based on Method of Preparation and Water content

Type of buttermilk	Method of preparation	Properties and Actions
<i>Ghola</i>	Churned curd without adding water and without removal of fat	Mitigates <i>Vata pitta</i> , gives contentment when mixed sugar
<i>Mathita</i>	Churned curd without adding water but devoid of fat	Pacifies <i>Kapha</i> and <i>pitta</i>
<i>Takra</i>	Churned curd by adding one fourth quantity of	Light for digestion, kindles digestive

	water to it	fire, aphrodisiac , <i>grahi</i> , <i>trupitkaraka</i> (contemplating) and <i>tridosahara</i> (pacifies tridoshas)
<i>Udashvita</i>	Churned curd by adding half part of water to it	<i>Kaphakaraka</i> (Increases <i>kapha</i>), <i>balya</i> (strengthening)
<i>Chachika</i>	Devoid of fat by churning and then added with more quantity of water	Pacifies <i>Pitta</i> and <i>Vata</i> , relieves thirst, tiredness, kindles digestive fire by adding <i>saindhava lavana</i> (rock salt)

Indications of buttermilk: Fat free buttermilk is useful in various conditions like *shotha* (oedema), *grahanidosha* (IBS), *sneha vyapad* (complications related to consumption of medicated fat), *garavisha* (artificial poison), *arsha* (hemorrhoids), *atisara* (diarrhoea), *pandu* (anemia), *aruchi* (anorexia), *chardi* (vomiting), *praseka* (excessive salivation), *mutrakrichra* (dysuria), *sthoulya* (obesity), *udara* (ascitis) and diseases related to skin and spleen^[15,10]. It is also recommended in cold seasons (because of its hot potency), during conditions of weakened digestive ability and in diseases caused by *kapha* and *vata dosha*, obstruction of channels of tissues (*srotorodha* mainly *vataleshmavruta marga*)^[16]. Buttermilk with fat is useful in *vishamajwara* (intermittent fevers)^[17]. It is *hrudya* (good for heart), *tarpana* (satisfaction), *Prinana* (soothing), *Pustikara* (nourishing) and *Grahi* (binds the feces)^[17]. Sphingolipids (SL) are important components of the MFGM found in buttermilk. These dietary SL have cholesterol-lowering properties and triacylglycerol primarily through inhibition of intestinal absorption of both cholesterol and triacylglycerol^[18]. The double-blinded randomized cross over placebo controlled study, concluded that consumption of buttermilk led to reduction in serum cholesterol (-3.1%, p = 0.019), LDL-C (-3.1%, P = 0.057) and triacylglycerol (-10.7%, p = 0.007) in men and women^[19].

Table 3.

Takra as Pathya (wholesome diet)	Takra as Aushadhi (Medicine)	Takra Anupana
<i>Mandagni</i> ^[20]	<i>Krimi</i> ^[21]	Diseases with involvement of <i>Vatadosha</i> ^[20]
<i>Krimi</i> (worm infestation) ^[21]	<i>Shopha</i> ^[33]	<i>Arsha</i> (haemorrhoids) ^[25,41, 42,43]
<i>Ghrita vyapad</i> (complications due to excess internal oleation) ^[22,23]	<i>Arsha</i> ^[34,35,36]	<i>Grahani</i> ^[44]
<i>Shopha</i> (oedema) ^[23]	<i>Grahani</i> ^[37,38]	<i>Kasa</i> (productive cough) ^[45]
<i>Arsha</i> (haemorrhoids) ^[24, 25,26,27]	<i>Vata roga</i> ^[39]	<i>Vishamajwara</i> (intermittent fever) ^[46]
<i>Grahani</i> (IBS) ^[23,28]	<i>Kapha roga</i> ^[39]	<i>Vata roga</i> ^[47]
<i>Mutragraha</i> ^[23]	<i>Hridroga</i> (Diseases related to heart) ^[40]	<i>Kapha roga</i> ^[47]
<i>Aruchi</i> ^[23]	<i>Gulma</i> (tumor) ^[40]	<i>Mutrakrichra</i> ^[47]
<i>Pandu</i> (anaemia) ^[23]	<i>Anaha</i> (distension of abdomen) ^[40]	<i>Gulma</i> ^[47]
<i>Garavisha</i> ^[23]	<i>Udara</i> (Ascitis) ^[28]	<i>Rjayakshma</i> (Tuberculosis) ^[48]
<i>Rjayakshma</i> (Tuberculosis) ^[29,30]		<i>Atisara</i> ^[49]
<i>Arsha</i> ^[24,26,27]		
<i>Mutrakrichra</i> (dysurea) ^[31]		
<i>Chardi</i> (vomiting) ^[32]		

Contraindications of buttermilk^[50,51]: Even though buttermilk is well advised diet in many diseases, sour fat free buttermilk cannot be used in conditions like in case of trauma/wounds, *ushna kala* (hot seasons -*ushna kale sharad greeshmayo*) *krisha* (debilitated persons) and *sutika*(puerperium); sour buttermilk in fainting, giddiness, burning sensation & disorders of *rakta* and *pitta*; sweet full fat buttermilk in aggravated *kapha* which is situated specially in chest, throat and head. In the warm, the vital functions of lactic acid bacteria accelerate and they convert more milk sugar into lactic acid. As a result, the taste of the product becomes more sour then may be not acceptable to the palate of many people.

Nutritional value and health benefits of buttermilk: Buttermilk has wider variation in its composition as it varies with milk quality and its dilution. On an average it consists of total solids 4%, lactose 3%-4%, lactic acid 1.2%, protein 1.3% and fat 0.8%. It is rich source of Calcium, Phosphorus, water soluble vitamins like Vitamin B₂ & B₁₂. (Table 4).

Buttermilk contains various probiotics mainly *L. lactis* subsp. *lactis*, *L. lactis* subsp. *lactis* var. *diacetylactis*, *L. lactis* subsp. *Cremori*^[52]. The probiotics are the 'live microorganisms which when administered in adequate amount confer health benefits to the host' (FAO/WHO, 2002)^[53]. The presence of Lactic Acid Bacteria and Lactic Acid in buttermilk inhibit the growth of many pathogenic organisms. Continuous consumption of Lactic fermented milk may help to change the intestinal flora and prevent the growth of putrefactive organisms. Lactic fermented milk products are more readily digested than unfermented milk by persons suffering from intestinal disorders^[55]. Probiotic-Lactic Acid Bacteria (LAB)- not only improve intestinal tract health but also does various functions like suppressing the endogenous pathogens (eg. antibiotic associated diarrhea) and exogenous pathogens (eg. traveler's diarrhea), enhancing the immune system modulation, cholesterol reduction, synthesizing and enhancing the bioavailability of nutrients, aid in lactose digestion, small bowel bacterial overgrowth, urogenital infection, decreasing the prevalence of allergy in susceptible individuals, decreases the production of a variety of toxic or carcinogenic metabolites and aid absorption of minerals, especially calcium, due to increased intestinal acidity^[52]. It was also found to protect against colon cancer by Sphingomyelin which is specifically responsible for the reduction in the number of apoptosis- resistant cells, predictive of colon cancer^[57]. Drinking buttermilk significantly lowers blood pressure on regular consumption^[58] and a high water content and mineral content allows the use of buttermilk both for maintaining the water balance and electrolyte balance of the human body in case of diarrhea and as a quick thirst quencher. Thus if consumed regularly, lead to longer, healthier life.

Table4. Constituents of 100 gm buttermilk (low fat)^[59]

Calories	40 kcal
Water	90.13 g
Macronutrients	
Carbohydrates	4.79 g
Protein	3.43 g
Fats	0.51 g
Micronutrients – Vitamins	
Vitamin A	47 IU
Vitamin C	1.0 mg
Vitamin B 6	0.034 mg
Vitamin D	1 IU
Thiamin	0.034 mg
Riboflavin	0.154 mg
Niacin	0.058 mg
Micronutrients – Minerals	
Potassium	151 mg
Calcium	116 mg

Iron	0.05 mg
Magnesium	11 mg
Phosphorous	89 mg
Sodium	190 mg

CONCLUSION

Buttermilk is easily available, easy to prepare and a nutritious beverage or dietary substance all around the year; it provides probiotics which are 'friendly' bacteria that help in maintaining beneficial bacteria in the intestines and warding away disease causing microbes, improves the digestion and metabolism therefore improving immunity. Butter milk detoxifies body and cleanses the intestines, relieves constipation and helps to replenish intestinal flora; forms a complete drink and thirsty quencher. Daily intake of buttermilk helps to maintain the health and beneficial in curing various disorder like *grahani*, *atisara*, *arshas* etc by its *tridosahara guna* and prime cause in improving digestive power. Thus it can be beneficial in preventing, promoting and curative aspects of health there by acts as a nectar on earth.

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