

DIETIC PRACTICE OF CURD – DEMOGRAPHIC SURVEY

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Abstract

Curd is a milk product prepared in households and also widely available commercially. It comprises medicinal properties and also commonly useful in Indian culture as a food and auspicious substance for religious ethos. In the present era extensive research throws light on the benefits of curd, as it is endowed with large spectrum of bacteria that provide a number of health benefits such as lowering the bad cholesterol, hypertension and preventing certain disorders like allergic rhinitis etc. It possesses sour taste and sour post digestive effect, hot in potency, abhishyandi in nature [increases secretion and coats the channels carrying dosha (bodily humor), dhatu (tissue) and mala (waste products)] and heavy for digestion. Because of these attributes, manifests certain disorders like kustha (skin disease), prameha (diabetes), shotha (inflammation) and so on. Hence Ayurveda postulates certain rules for its intake, as per time and method of consumption. Also specifies certain adjuvant to contradict above ill effects. After a thorough literature search of all available authoritative texts of Ayurveda, a probable hypothesis is framed and conclusion is drawn. Based on this review, a pilot demographic survey has been conducted in villages around Hassan district, Karnataka to analyze the method of curd consumption and frequency of adjuvant used.

Key words: Curd consumption; Adjuvant; Rules.

Key messages: Curd is a habitual diet for people since time immemorial, and bestows benefits when consumed in accordance with rules, with suitable adjuvant.

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INTRODUCTION

Ayurveda focuses on healthy life style practices, where diet plays an important role. Curd is a wholesome diet, if taken prudently does not harm the body, rather gives pleasure to the mind.^[1] Thus it is universally accepted milk product, 9.1% of total milk in India is being converted to curd and its growth rate is more than 20% per annum.^[2] In Ayurveda, curd has been restricted in several ways viz., with respect to time (day, season, duration of consumption), heating directly, mixing or processing with hot substances etc. along with these, for prevention of ill effects addition of certain adjuvant are also specified.^[3] This article reveals critical analysis of facts found in pilot study based on available research updates, considering rules for curd consumption and pharmacokinetics of adjuvant.

Aims and objectives

Survey study to evaluate the method of curd consumption in villages around Hassan.

MATERIAL AND METHODS

Sampling

According to the 2011 census Hassan district has a population of 17,76,221, the sample size was calculated using the formula, $n = z^2 \frac{pq}{d^2}$. This formula yielded 650 as minimal sample size for study, hence 836 volunteers are administered self structured questionnaire to assess objective. Cross sectional sampling method was adopted to select volunteers from Kyatnahalli, Haradarahalli and Ibdane villages of Hassan, Karnataka, India where dairy cattle's farming is the main occupation and curd is a regular diet. In addition, two government colleges of Hassan are also (most of the students were from villages) screened for the study purpose.

Collection and analysis of data

Volunteers were screened through face to face interview in villages and group interview in colleges. Questionnaire (Kannada and English version) was printed on the A4-sized paper and was administered to volunteers. The completed questionnaires were then collected, the data entry and analysis was carried out using SPSS version 16.

RESULTS

Considering aim of study, questionnaire had ten items related to frequency, method, time of curd consumption and adjuvant in practice.

1. Time and frequency

- a. In this study 626 volunteers (81.3%) were consuming curd since childhood. (Table 3). Whereas 439 volunteers (52.5%) were of occasional curd consumers. (n=765) (Table 4)
- b. Out of 765 volunteers, majority of 43% were consuming curd at noon, 28.4% at night and 23.3% in the morning. (Table 2)

2. Season

Majority of 65.4% of volunteers were consuming curd daily during summer, 24.4% were during rainy and minimum of 24.2 % were during winter (n=765). (Table 5)

3. Taste

Majority of volunteers 56.5% were daily consuming sweet-sour curd (madhuramla dadhi) and minimum 8.3% of volunteers were consuming unformed curd (mandaka dadhi). (n = 765) (Table 7)

Table 1: Rules for curd consumption according to different authors

Author	Season	Adjuvant
	Hita	Ahita
Harita	Hemanta, Shishira Varsha	Sarat Greeshma Vasanta
Belasamhita	-	-
Vangasena		
Astanga Sangraha		Vasanta Ushna Sharat
Yoga Ratnakara	Hemanta, Sishira Varsha	Sharat Greeshma Vasanta
Dallhana	-	-

Table 2: Distribution of 782 volunteers based on Time of intake

Curd consumer	Time-morning		Time-noon		Time-night	
	No. of volunteers	%	No. of volunteers	%	No. of volunteers	%
Non	336	42.9	152	19.4	336	42.9
Occasional	266	33.9	295	37.6	225	28.7
Daily	180	23.0	332	42.4	221	28.2

4. Heating of curd or mixing with hot substances (Table 7)

Majority of 47% of volunteers frequently consuming curd with palav (rice prepared with more spices and usually served hot with curd) (n=765) (Table 7).

5. Frequency of adjuvant in practice

Among volunteers 27.9% and 5.7% were consuming curd with sugar and amalaki (*Phyllanthus emblica* Linn.) respectively. Whereas 50.2% of volunteers were consuming curd with salt (n=765). (Table 7)

6. Quantity

Quantity of curd consumed by majority of volunteers was observed to be an average 30-50ml per meal.

7. Other factors to be considered during curd consumption

Table 3: Distribution of 836 volunteers based on duration of curd consumption

Since childhood curd consumption	No of volunteers	%
No	135	16.1
Sometimes	231	27.6
Yes	470	56.2

Table 4: Distribution of 836 volunteers based on frequency

Frequency of curd consumer	No of volunteers	%
Non consumers	54	6.5
Occasional consumer	439	52.5
Daily consumer	343	41.0

- A. Place

Janmataha desha (birth place) and pravruddhataha desha (grown up place) of

61.8% and 67% volunteers is anupasadhara desha (marshy land).

B. concept of viruddha (incompatibility)

Minimum of 4.6% were consuming frequently curd with fish. (Table7).

DISCUSSION

Curd being common diet, in practice since ancient days, its consumption is restricted in several ways in Ayurveda. However in this regard opinion differs among scholars of different texts (Table 1), the common facts enumerated are analyzed critically as follows.

Curd consumption is restricted at night (Table 3); as tamo quality being predominant, slows down the process of digestion and constricts the channels, which in turn vitiates kapha (prakopa). Contradiction of its use at night should not be presumed that it can be partaken during day, as it is not in the list of daily consumable food (nitya sevana dravya) (Table 4, 5).^[4] However its restriction is reasoned because of its attributes like heavy (prakrutitaha – by nature), unctuous and abhishyandi.^[3] For instance in the manuscript ashvini samhite, time taken for digestion of curd is mentioned as “twenty nights”, which symbolizes the extent of heaviness it inherits. Supportive to this fact, it is noted that, gastric emptying time during liquid phase is shorter for milk (35min) than for curd (60min).^[11] Nevertheless its daily consumption may yield diseases like herpes, bleeding disorder, skin disease, anemia, giddiness, jaundice,^[3] edema^[6] and diabetes.^[7] Also it is contraindicated in diseases like gouty arthritis⁸ and disorders of oral cavity.^[9]

Though all the authoritative texts do not provide further clarification regarding frequency of curd consumption, Acarya Arunadatta specifies as alternate days.^[5] Hence nitya should not be limited to its literal

meaning daily and long term consumption of curd but also the implied meaning regular or specific interval.

Majority of volunteers were consuming daily madhuramla dadhi compared to mandaka dadhi (Table 9). Sweet curd undergoes madhura avastha paka (sweet post digestion effect) hence produces kapha vriddhi lakshana like tandra (sleepy), alasya (lack of interest for work) etc. However studies accomplish that post-prandial somnolence like feeling sleepy, less awake (2-3 hr after food), and more fatigue were significantly greater (3 hr) after the intake of high-fat-low- carbohydrate (CHO) meal than after the low-fat-high-CHO.^[10]

Curd should not be consumed during autumn, summer and spring (Table 6), since kapha and pitta gets aggravated respectively in these seasons, As per the study, Majority of 65.4% of volunteers were consuming curd daily during summer. In summer it is restricted due to its hot potency.^[3] During rainy season vatadi dosha (vata, pitta and kapha) get vitiated due to influence of environmental changes. Hence curd being predominant of sweet and sour taste, is beneficial as wholesome diet.

Heating curd, a form of samskara viruddha (process incompatibility)^[3] is not advised as it may alter the properties. Being hot in potency, it should not be mixed or processed with hot substances (naivoshna) (like hot served palav). Preparation of palav includes shali dhanya with more spices commonly served in hot state with curd which may vitiate pitta. Whereas Acarya Arunadatta interprets naivoshna as, agnyadi santapta which means, direct heating of curd.^[5] However study found heated fat is more dangerous.^[20]

An individual, who wants to consume curd daily, should consume (Table 7) it either with mudga supa (soup of *Vigna radiate*), madhu

(honey), ghrita (ghee), sitopala (sugar candy) or amalaki (*Emblca officinalis*).^[3] This adjuvant are claimed to counteract the adverse effects of curd, which are inturn due to vitiated kapha, pitta and rakta.

Green gram is astringent and sweet in taste, pungent in post digestion, unctuous, cold in potency, light for digestion and non slimy.^[11] These properties are antagonistic (vipareeta) to curd, thereby alleviates vitiated kapha and pitta. Green gram gruel is prepared by grounding it with salt and fragrant substance like hingu in curd (asafotida), which makes it light and cool.^[12] But in selected demographical area rasam is prepared out of Bengal gram.

Curd and honey possesses similar attributes like; sweet astringent taste; heavy for digestion; hot in potency. However honey is a vikruti vishamasamaveta dravya, possesses pungent post digestive taste, clears the channels and subside kapha. The combination becomes incompatible (samyoga viruddha) due to guru and ushnatara quality. However honey is advisable as an adjuvant, as it counter act the kleda property of curd by its ruksha guna.

Sugar candy and ghee being cold in potency, sweet both in taste as well as post digestion,^[13] promote digestion thereby avoids ill effects of curd on pitta and rakta.

Amalaki is a vikruti vishama samaveta dravya, comprises all tastes (except salt), cold in potency, sour post digestive effect and known to pacify tridosha.^[14] It can be recommended as regular diet, especially before, middle and end of the meal. By its ruksha property, it reduces abhishyadhi action of curd.

Saindava and water^[15] are added to the list of adjuvant by Acarya Harita; whereas ginger, pepper and asafetida^[16] were added by madanapala. This adjuvant may mitigate kapha, enhance taste, hunger and digestion.

Whereas in diseases like, hikka (Hiccup), shvasa (dyspnoea), arshas (Hemorrhoids), pleeha (Splenomegaly), atisara (diarrhea) and bagandara (fistula) it is advised with lavana as mentioned by acarya harita. In bojana kutuhalam,^[17] author takes the cross reference from the text Ayurveda mahodadhi and specifies its consumption with ela (*Elettaria cardamomum*), marica (*Piper nigrum* Linn.), trikatu or rajika curna (*Brassica campestris*). Hence according to the symptoms produced during curd consumption, appropriate adjuvant can be selected either in combination or separately according to one's own interest. The most common practice found during survey was consumption of curd with salt.

An experimental study showed impact of adjuvant added curd on biochemical parameter as, considerable reduction in protein level, Cholesterol other than curd with ghee group and blood sugar in curd with sugar, buttermilk. In other hand considerable increase of urea, creatinine and alkaline phosphate in comparison to plain curd fed animals. Hence according to the symptoms produced during the consumption of curd, appropriate adjuvant can be selected either in combination or separately according to once own interest. In this regard an experimental animal study was conducted to elicit the comparative toxic effect of curd administered with and without adjuvant. Considerable reduction in serum protein, globulin, serum creatinine and increase in urea, SGOT, alkaline phosphate was observed in plain curd group and curd with adjuvant group respectively. Significant increase was also seen in serum protein, cholesterol (Alkaline Phosphates) and blood sugar in two groups - curd with ghee; curd with sugar.^[18] This study concluded that no significant difference was found in both the groups, which were administered curd with and without adjuvant. However they have noted the adverse effect of plain curd on liver and kidney.

Table 5: Distribution of 782 volunteers based on Season

Curd consumer	Winter		Summer		Rainy	
	No of volunteers	%	No of volunteers	%	No of volunteers	%
Never	374	47.7	52	6.6	390	49.7
Occasional	220	28.1	219	27.9	201	25.7
Daily	188	24.0	512	65.4	191	24.4

Table 6: Distribution of 782 volunteers based on Adjuvant specified in authoritative text

Adjuvant	With-sugar		With-Rasam		With-honey		With-ghee		With-Amalaki	
	No of volunteers	%	No of volunteers	%	No of volunteers	%	No of volunteers	%	No of volunteers	%
Never	428	55.2	596	77.0	708	90.5	719	91.9	708	91.4
Rarely	138	17.6	75	9.7	28	3.6	18	2.3	28	3.0
Frequently	216	27.9	111	14.1	46	5.9	45	5.8	46	5.7

Table 7: Distribution of 782 volunteers based on practice of curd consumption

Method	With-salt		With-milk		With fish		With Palav	
	No of volunteers	%	No of volunteers	%	No of volunteers	%	No of volunteers	%
Never	259	33.4	608	78.5	696	89.8	280	36.1
Rarely	127	16.4	45	5.8	43	5.5	128	16.5
Frequently	389	50.2	122	15.7	36	4.6	367	47.4

Table 8: Distribution of 782 volunteers based on Taste of curd

Taste of curd	Sweet (Madhura)		Sour (Amla)		Before fermentation (Mandaka)	
	No of volunteers	%	No of volunteers	%	No of volunteers	%
Never	197	25.3	399	51.4	629	81.2
Occasional	142	18.2	211	27.2	83	10.6
Daily	443	56.6	172	21.9	70	8.9

Though adjuvant is specified, its form of usage is not explained in authoritative texts of Ayurveda. Example usage of amalaki, is evident in different forms like juice, decoction, powder, fermented preparations like asava and arista. svarasa and kalka being heaviest among all the pancavidha kashaya kalpana; arista is sour and due to samskara (toyagni) the attribute of agni mahabhuta increases, which also commonly advised as anupana (post drinks) after consumption of

food. While selecting the adjuvant, taste plays an important role, hence decoction may not be an ideal form. Amalaki is advised for daily usage, being seasonal fruit not possible to consume in fresh from throughout the year, hence powder form is much suitable as an adjuvant to curd. Also it overcomes the kledata of curd by ruksha property.

In survey it is evident that ghee, honey and sugar are mixed with curd, where as amalaki is

used in preparation (fresh or dried amalaki is grinded with coconut, pepper and jiraka then mixed with curd). Commentary sarvanga sundari on astanga hrudaya quoted “capya ghritasharkara”^[5] i.e. ghee and sugar candy should be added in equal quantity.

Author opines that properly formed curd, even without adding adjuvant, in little quantity with the gap of a week or occasionally can be consumed; otherwise enumerating the qualities of it is futile. In study it was found that volunteers are consuming around 30 - 50 ml of curd per meal.

Curd is unwholesome for the people of low altitude area, as vipareeta guna to place should be considered while selecting the food article.^[19] Survey being conducted in anupa sadharana, which is kapha pradhana desha, curd cannot be considered as wholesome diet.

Curd with fish/milk (Table 8) is an example for samataha viruddha (possessing similar quality act as incompatible) as both have similar qualities like abhishyandhi and madhura vipaka. These are also incompatible by their potency (vishamataya-opposite) which will lead to tridosha prakopa.

To support this, a study showed that curd is not advisable with different food substance like starch (wheat, rice, potatoes and other cereals), protein (nuts, legumes, meat, fish, egg); sugar (white sugar, fruits and honey). Among these fats with proteins are considered as an incompatible combination, as fats depress the action of gastric glands and inhibit the release of gastric juice that needs to digest proteins. Fat lowers the entire digestive tone more than half, hence food items insulated with fat remains longer in the digestive tract, demands over activity and strain.^[20]

CONCLUSION

Curd is advisable occasionally during varsha, shishira and hemanta in alittle quantity, in day

time, without heating and mixing with relevant adjuvant like ghee, sugar etc. in addition authoritative texts of ayurveda states curd can be diet for individuals who follow dinacarya like vyayama, udvartana regularly. Incompatibility with other diets like milk, fish etc should also be considered while preparing foods using curd. In study area the people were not consuming curd as per rules, however usage of certain adjuvant are in practice.

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