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### Preparation of Honey Dahi

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**Abstract:** The present study entitled Preparation of honey *dahi* was carried out in laboratory. *Dahi* was prepared by using two strains of *Lb. acidophilus*, (strain 1 and strain 2). The 5%, 8% and 10% levels of honey and 1.5 % of cultures of *Lb. acidophilus* strains were used for preparation of honey *dahi*. The *dahi* sample was evaluated for their chemical, microbiological and organoleptical quality. Fat, protein, total solids, acidity, lactose content of sample of *dahi* were in the range of 3.86 to 4.25, 3.20 to 3.38, 12.05-13.13, 0.66 to 0.88, 4.15 to 4.46 per cent, respectively. The *dahi* samples of treatment T<sub>2</sub> and T<sub>6</sub> shown higher *Lactobacillus* counts (30.33 x 10<sup>6</sup> cfu/g and 31.33x10<sup>6</sup> cfu/g) as compare to samples of control *dahi* which are beneficial from nutritional and therapeutic point of view. The coli form counts and yeast and mould of all *dahi* samples were in the range of 0 to 4 cfu/g and 16 to 25 cfu/g, respectively. The *dahi* samples of treatment T<sub>2</sub> and T<sub>6</sub> secured highest score for its overall acceptability. The samples of *dahi* treatments T<sub>2</sub> and T<sub>6</sub> were attractive, possessing pleasant flavor, smooth and firm body and texture and glossy surface without any free wheying off from *dahi*. It is concluded from the present studies that honey *dahi* can be prepared by using 5 % honey and 1.5% culture of *Lb. acidophilus*.

**Key Words:** Cow milk, Honey Dahi

#### INTRODUCTION

Fermentation represents one of the earliest biotechnological processes. The origin of food fermentations go back to the dawn of civilization. A wide array of agricultural material is converted into fermented foods throughout the world. The major impetus for food fermentations is to preserve

perishable food materials in a relatively stable form. This is critical under tropical conditions and where wide spread refrigeration is unavailable. A secondary reason is to induce variety in foods in terms of taste, texture, flavour and mouthfeel. *Dahi* is one of the most important fermented milk product. *Dahi* possesses refreshing, nutritional and therapeutic

values. The property of *dahi* is not only due to its refreshing and palatability but also due to its scientifically proven role of nutritive and therapeutic values (Sinha and Sinha, 2000). A greater concern in the use of natural and healthy new substances as food additives has been recently raised (Kneifel and Pacher, 1993). Incorporation of sweeteners into fermented dairy products, in order to improve micro-organism growth and viability, has been of much interest in the dairy industry (Tamime and Robinson, 1985). Among sweeteners honey is popular sweetener throughout the world of the consumer who use honey, 93 per cent consider honey a healthful product, recognizing it as a pure, natural product and 15 per cent think of it as a good home remedy. Overall honey has a positive profile with nearly 62 per cent of users “especially liking” it for its taste and flavour, 24 per cent because it is natural and 16 per cent because it is good for you since ancient times honey has been used for its nutritional benefits and medicinal properties in many cultures. A daily dose of 20 g honey will cover about three per cent of the energy requirement. Honey’s contribution to human protein intake is marginal with respect to quantity (Emmanuel, 2010).

## MATERIALS AND METHODS

Method of preparation of dahi suggested by De (2008), was used with slight modifications. Preheated cow milk was standardized to 3.5 per cent fat and then it was pasteurized to 80.-90°C for 15-30 minutes. Then it was cooled to 30-35°C and addition of honey as per treatment and it was inoculated with starter culture *Lactobacillus acidophilus* @1.5%. After incubating for 35-37°C/6-8 hrs, it was cooled and stored to 5°C. The Fat content in *dahi* was determined by Modified Gerber method as per IS : 1224, Part-I (1977). total solid was as per IS:2802 (1964). The protein content were estimated by micro Kjeldhal method recommended in IS : 1479 Part-II (1961). The lactose content of fresh *dahi* was determined by Lane Eynon method prescribed in ISI Handbook

(1961), acidity was determined as per the method of IS: 1479 (Part I), 1960. The MRS agar medium having pH 6.4 was used for enumeration of total viable lactobacilli counts of *dahi* samples. The first and second dilutions of *dahi* sample has been used for enumeration of coliforms and organoleptic qualities of dahi were examined by panel of Judges on 9 point Hedonic scale (Amerine et al. 1965). The statistical analysis was done by using Factorial Completely Randomised Design.

The treatments were as under: In the experiment the cultures of *Lb.acidophilus* were used for the preparation of *dahi* as under : Treatment code

T1 (control)	: Milk + Lb. acidophilus (strain1) @ 1.5 %
T2	: Milk + Lb. acidophilus (strain1) @ 1.5 %
T3	: Milk + 8% honey + Lb. acidophilus (strain1) @ 1.5%
T4	: Milk + 10% honey + Lb. acidophilus (strain1) @ 1.5%
T5 (control)	: Milk + Lb. acidophilus (strain 2) @ 1.5 %
T6	: Milk + 5 % honey + Lb. acidophilus (strain2) @ 1.5%
T7	: Milk + 8 % honey + Lb. acidophilus (strain2) @ 1.5%
T8	: Milk + 10% honey + Lb. acidophilus (strain2) @ 1.5%

## RESULTS AND DISCUSSION

The chemical composition, microbiological and quality parameters of honey dahi prepared from different levels of cow milk are depicted in table 1, 2, and 3 respectively. Fat content of samples of *dahi* were in the range of 3.86 to 4.25 per cent and coincided with the result of Laxminarayana and Shankar (1980). Average fat content was maximum in T<sub>1</sub> (4.25%) and T<sub>5</sub> (4.22%). T<sub>4</sub> (3.86%) and T<sub>8</sub>

(3.90 %) contained lower fat than other samples of *dahi*. The fat contents were decreased by addition of honey. The values of fat content of all samples of *dahi* did not differ significantly from each other. The protein content of samples of *dahi* were ranged from 3.20 to 3.38 per cent. Maximum protein content was found in T<sub>8</sub> (3.38%) & T<sub>4</sub> (3.37%) while minimum in T<sub>5</sub> (3.20 %). Value for protein content of all samples of *dahi* did not differ significantly from each other. Protein content of samples of *dahi* are coincided with the result of Laxminarayana and Iya (1952), Rangappa and Achaya (1974), Laxminarayana and Shankar (1980) and De (2008). The total solids of all treatments are significantly differ from each others. The *dahi* sample T<sub>8</sub> and T<sub>4</sub> shown higher total solid than other samples of *dahi*. The T<sub>1</sub> and T<sub>5</sub> (control) *dahi* contained lowest total solid (12.05 and 12.09 %) than remaining samples of *dahi*. The total solids content of *dahi* samples are coincided with the results of Srinivasan and Ahantakrishnan (1964). The acidity of samples of *dahi* were ranged from 0.66 to 0.88 % LA. The maximum acidity was found in T<sub>1</sub> and T<sub>5</sub> (0.66 & 0.67 % LA) while minimum was found in T<sub>4</sub> and T<sub>8</sub> (0.87 & 0.88 % LA) honey *dahi* samples. The acidity of all samples of *dahi* did not differ significantly from each other. Acidity of samples of *dahi* were coincided with the results of De (2008), Ragappa and Acaya (1974) and Laxminarayana and Iya (1952). The lactose content samples of *dahi* were ranged from 4.15 to 4.46 per cent. Maximum lactose content was found in T<sub>5</sub> (4.46 %) and T<sub>1</sub> (4.42 %) while minimum in T<sub>4</sub> (4.15 %) and T<sub>8</sub> (4.19 %). Value for lactose content of all samples of *dahi* did not differ significantly from each other. Lactose content of samples of *dahi* are coincided with the results of De (2008) and Laxminarayana and Iya (1952).

The samples of *dahi* T<sub>2</sub> and T<sub>6</sub> containing 5 % honey shown higher *lactobacilli* count 30.33 x 10<sup>6</sup> cfu/g and 31.33 x 10<sup>6</sup> cfu/g (i.e. in the range of 30 x 10<sup>6</sup> to 32 x 10<sup>6</sup> cfu/g) as compare to control samples. The *dahi* T<sub>4</sub> and T<sub>8</sub> containing 10 % honey shown

lower *lactobacilli* count 21.33 x 10<sup>6</sup> cfu/g and 22 x 10<sup>6</sup> cfu/g than other honey *dahi* samples. Addition of 5 % honey is useful for growth of *Lb. acidophilus* and addition of 8 % and 10 % honey shown decreasing trend in count of *Lb. acidophilus*. There was not much difference in the counts of *Lb. acidophilus* (strain 1) and *Lb. acidophilus* (strain 2) when grown in *dahi* containing 5 % honey. The T<sub>2</sub> (*Lb. acidophilus* strain 1) *dahi* shown counts of 30.33 x 10<sup>6</sup> cfu/gm whereas T<sub>6</sub> (*Lb. acidophilus* strain 2) shown the counts of 31.33 x 10<sup>6</sup> cfu/gm. Even in other samples of honey dahi did not shown much difference in counts of *Lb. acidophilus*. The coliform counts in *dahi* were in the range of 0 cfu/g to 4 cfu/g. It was below the standard prescribed by IS-9617 (1980). The count of yeast and mould remained within the limit (maximum 100 cfu/g) prescribed by IS : 9617 (1980).

The T<sub>2</sub> *dahi* and T<sub>6</sub> *dahi* sample secured maximum flavour score (8.03) and (8.01). The mean score flavour of T<sub>3</sub> *dahi* was significantly lowest (6.35) than other *dahi* types. It had off, unpleasant aroma. Body and texture of T<sub>2</sub> and T<sub>6</sub> samples of *dahi* was smooth and glossy while cut surface was firm and free from crack and gas bubbles. The samples of *dahi* T<sub>4</sub> and T<sub>8</sub> obtained significantly lowest score than other honey *dahi*. This score was minimum as it had too weak body and there was wheying off *dahi*. The honey *dahi* sample T<sub>2</sub> and T<sub>6</sub> were secured highest score (8.45 and 8.38) for colour and appearance. The honey *dahi* samples T<sub>2</sub> and T<sub>6</sub> containing 5 % honey were attractive and had uniform body with smooth and glossy surface without any free wheying off on top. The honey *dahi* samples T<sub>4</sub> and T<sub>8</sub> secured significantly lowest score (6.36 and 6.17) than rest of *dahi* samples for colour and appearance as free wheying off was observed on the top of surface. The honey *dahi* samples T<sub>2</sub> and T<sub>6</sub> secured highest score (8.45 and 8.38) for taste than other *dahi* samples. T<sub>2</sub> and T<sub>6</sub> ranked first so far taste is concern as it contained delicate and clean acid taste. The T<sub>4</sub> and T<sub>8</sub> honey *dahi* secured significantly lowest score (6.36 and 6.17) than rest

**Table 1**  
**Chemical composition of *dahi***

Sr. No	Chemical composition (%)	Treatments								SE	CD at 5%
		T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	T <sub>7</sub>	T <sub>8</sub>		
1.	Fat	4.25	4.06	4.00	3.86	4.22	4.10	3.95	3.90	0.06	NS
2.	Protein	3.23	3.24	3.35	3.37	3.20	3.25	3.33	3.38	0.04	NS
3.	Total Solid	12.05	12.17	12.46	13.12	12.09	12.42	12.52	13.13	0.007	0.02
4.	Acidity	0.66	0.75	0.85	0.87	0.67	0.77	0.86	0.88	0.008	0.02
5.	Lactose	4.42	4.33	4.24	4.15	4.46	4.37	4.28	4.19	0.014	NS

**Table 2**  
**Microbiological quality of *dahi*.**

Sr. No.	Microbiological Composition (cfu/g)	Treatments								SE	CD at 5%
		T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	T <sub>7</sub>	T <sub>8</sub>		
1.	Lactobacilli count	26.33 <sup>c</sup> x10 <sup>6</sup>	30.33 <sup>g</sup> x10 <sup>6</sup>	24.33 <sup>cd</sup> x 10 <sup>6</sup>	21.33 <sup>a</sup> x 10 <sup>6</sup>	26.67 <sup>ef</sup> x 10 <sup>6</sup>	31.33 <sup>gh</sup> x 10 <sup>6</sup>	24.33 <sup>c</sup> x 10 <sup>6</sup>	22 <sup>ab</sup> x 10 <sup>6</sup>	0.24	0.75
2.	Coliform Count	3.33	2.00	1.00	0.33	3.33	1.33	1.00	0.66	-	-
3.	Yeast and molds Count	25	16	21	20	22	18	19	17	-	-

**Table 3**  
**Organoleptic quality of the *dahi***

Sr. No	parameter	Treatments								SE	CD at 5%
		T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	T <sub>5</sub>	T <sub>6</sub>	T <sub>7</sub>	T <sub>8</sub>		
1.	Flavour	7.14	8.03	6.35	6.66	7.29	8.01	6.75	6.44	0.05	0.16
2.	Body and texture	7.81	8.02	6.68	6.60	7.81	8.01	6.74	6.63	0.05	NS
3.	Colour and appearance	7.25	8.45	6.55	6.36	7.24	8.38	6.89	6.17	0.03	0.09
4.	Taste	7.25	8.45	6.89	6.36	7.24	8.38	6.56	6.17	0.03	0.09

of honey *dahi* samples for taste because it was lacking clean acid taste.

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