



## Physico-chemical properties of *Lassi* from buffalo milk blended with coconut milk

S.S. BHUTKAR, HASSAN BIN AWAZ AND R.L. KORAKE

**ABSTRACT:** Coconut milk blended *Lassi* was prepared from different preparation of coconut milk blends. The product obtained was subjected for chemical analysis. On an average, the coconut milk blended *Lassi* of treatment T<sub>0</sub>, T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub> contained moisture was found to be 83.84, 81.81, 80.25 and 77.97 per cent, fat 2.94, 2.81, 2.76 and 2.74 per cent, protein 1.28, 1.74, 1.79 and 1.84 per cent, ash 0.38, 0.42, 0.49 and 0.54 per cent, total solids 16.09, 18.19, 19.75 and 21.78 per cent and carbohydrate 11.55, 13.21, 14.70 and 16.92 per cent, respectively. The observation in respect of titratable acidity was found to be 0.61, 0.59, 0.59 and 0.57 per cent, respectively.

**KEY WORDS:** *Lassi*, Buffalo milk, Coconut milk

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### INTRODUCTION

Fermented milk plays important role in the human consumption as refreshing beverages and nutritious food in many parts of the world since earliest ages. There are several varieties of fermented milk prepared according to local traditional practices and known under various names such as Acidophilus milk, Bulgarian milk, Cultured milk, *Dahi*, *Leben*, *Kefir*, *Kumis*, *Taete*, *Lassi*, *Yoghurt* etc. (Laxminarayan and Shankar, 1980)

Among the various fermented milk products, *Lassi* is one of the thirst quenching beverages. *Lassi* is popular indigenous fermented milk beverage which is usually prepared by mixing *Dahi* and water in approximately equal proportions. *Lassi* is also made directly prepared from *Dahi* or using butter milk.

The cost of dairy products has risen considerably over the year, which has given an input to the development of a wide range of substitutes with cost effectiveness, nutritional superiority, ease of manufacture, increased shelf-life and good

functional properties of dairy products. Therefore, the approach to utilize the coconut milk blended with buffalo milk for preparation of *Lassi* could be an alternative. Coconut is an indispensable ingredients in many of the traditional- cuisines of South East Asian countries including India. Fat in coconut oil is similar to fat in mother's milk and have similar nutraceutical effects. These health effects were recognized about 4000 years ago in Ayurvedic medicine (Kabara, 2002). It is rich in lauric acid; a source of disease fighting fatty acid derivative monolaurin, increasing HDL cholesterol, and does not elevate LDL cholesterol, serum triglycerides (Coconut Development Board, 2002a).

The market demand for instant food and *Lassi* is growing all over the world and consumers are seeing new tastes and maintain a healthy ration of w-6 to w-3 fatty acids, when consumed as part of diets. Hence, taking into accounts the market demand, consumer prefers the coconut milk blended *Lassi* is one of the important avenues of utilization in human food chain.

### MATERIALS AND METHODS

For preparation of *Lassi* from buffalo milk blended with coconut milk was carried out at the Department of Animal Husbandry and Dairy Science, College of Agriculture, Marathwada Krishi Vidyapeeth, Parbhani The whole fresh and clean buffalo milk taken and standardized to 6 per cent fat and

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then after prepared the coconut milk from wet coconut. Fully ripened coconut fruit was taken, after removing the karnel and water from the fruit copra was taken. For this study, 500 g of copra, making into small pieces, equal amount of water was added into a mixture and grinded it. This mixture was to soaked for 20 minutes. Again grinded the mix and strained this mixture with the help of muslin cloth. Finally squeezed with the help of muslin cloth to obtain complete coconut milk. Buffalo milk and coconut milk were mixed in different proportions as indicated below:

T<sub>0</sub> = 100 per cent buffalo milk standardized to 6 per cent fat.

T<sub>1</sub> = 90 per cent buffalo milk standardized to 6 per cent fat + 10 per cent coconut milk.

T<sub>2</sub> = 85 per cent buffalo milk standardized to 6 per cent fat + 15 per cent coconut milk.

T<sub>3</sub> = 80 per cent buffalo milk standardized to 6 per cent fat + 20 per cent coconut milk.

The *Lassi* was manufactured as per the standard procedure given by De (1980).

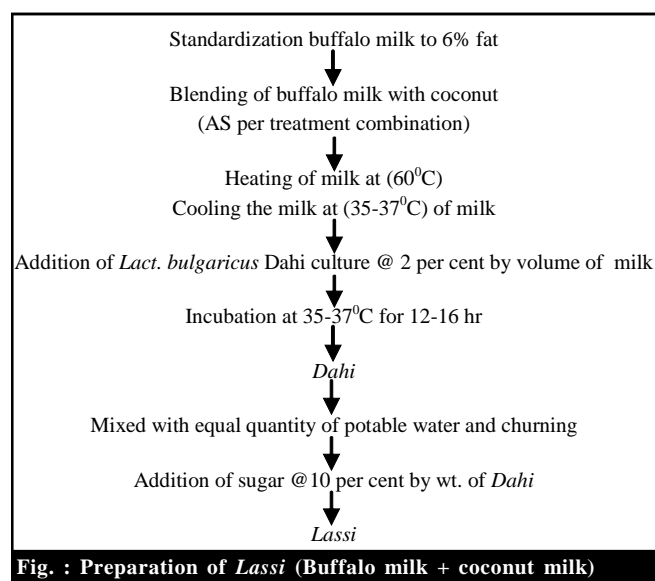


Fig. : Preparation of *Lassi* (Buffalo milk + coconut milk)

#### Statistical analysis:

The data obtained in the present investigation were tabulated. The data were analysed statistically by using completely randomized design (CRD) as per Panse and

Sukhatme (1985). The significance was evaluated on the basis of critical difference. In all, six trails were conducted.

## RESULTS AND DISCUSSION

The findings of the present study have been presented under following heads:

#### Physical analysis of coconut milk blended *Lassi*:

The coconut milk blended *Lassi* prepared under study was subjected for physical quality *viz.*, acidity.

#### Titrateable acidity:

The average acidity was 0.61, 0.59, 0.59 and 0.57 per cent for treatment T<sub>0</sub>, T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub>, respectively. All the treatments were non-significant from each other. It was further observed that the highest acidity was observed in treatment T<sub>0</sub> (0.61) followed by the treatment T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub>, which might be due to more lactose content in buffalo milk. The results also indicated that the coconut milk level had a slight effect on the acidity of the finished products (Table 1).

#### Chemical analysis of coconut milk blended *Lassi*:

The coconut milk blended *Lassi* prepared from different blends of coconut milk and buffalo milk were subjected to chemical analysis and results recorded for different parameter are presented in Table 2.

#### Moisture:

It was revealed from Table 2 that, the average moisture content of the product was found to be 83.84, 81.81, 80.25 and 77.97 per cent for treatments T<sub>0</sub>, T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub>, respectively. All treatments were significant from each other. It was observed that the moisture content was in decreasing order from treatment T<sub>1</sub> to T<sub>3</sub>. This might be due to the increase in the proportion of coconut milk blended with content of lower moisture.

#### Fat:

It was revealed that the average fat content in coconut milk blended *Lassi* was found to be 2.94, 2.81, 2.76 and 2.74 per cent for treatment T<sub>0</sub>, T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub>, respectively. The fat content in the formulated products ranged between 2.74 to 2.94 per cent. The highest fat content was recorded for treatment T<sub>0</sub> *i.e.* 2.94 and the lowest fat content was recorded for treatment T<sub>3</sub>

Table 1 : Titrateable acidity of coconut milk blended *Lassi* (per cent)

Treatments	Replication	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	R <sub>4</sub>	Mean
T <sub>0</sub>		0.62	0.61	0.60	0.62	0.61
T <sub>1</sub>		0.59	0.60	0.58	0.59	0.59
T <sub>2</sub>		0.58	0.59	0.60	0.59	0.59
T <sub>3</sub>		0.56	0.58	0.57	0.57	0.57
S.E. ± 0.0035		C.D. (P=0.05) = 0.0108				

**Table 2 : Chemical composition of coconut milk blended *Lassi* (per cent)**

Treatments	Moisture	Fat	Protein	TS	Ash	Carbohydrates
T <sub>0</sub>	83.84	2.94	1.28	16.09	0.38	11.55
T <sub>1</sub>	81.81	2.81	1.74	18.19	0.42	13.21
T <sub>2</sub>	80.25	2.76	1.79	19.75	0.49	14.70
T <sub>3</sub>	77.97	2.74	1.84	21.78	0.54	16.92
S.E.±	0.0310	0.0072	0.023	0.0394	0.0095	0.0364
C.D. (P=0.05)	0.0956	0.0222	0.089	0.1213	0.0293	0.122

*i.e.* 2.74 per cent. All the treatment combinations differed significantly over each other, as far as different blends were concerned.

#### Protein:

The average protein content of the finished product was found to be 1.28, 1.74, 1.79 and 1.84 per cent for treatment T<sub>0</sub>, T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub>, respectively. There was significant difference between the treatment T<sub>0</sub> and T<sub>1</sub>. Whereas the non-significant differences were observed between treatments T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub>. The highest protein content was recorded for treatment T<sub>3</sub> *i.e.* 1.84 per cent. The lowest protein content was recorded for treatment T<sub>0</sub> *i.e.* 1.28 per cent. This might be due to blending of coconut milk to *Lassi*, as the coconut milk increased the protein content in the finished product was increased because coconut milk contained more protein compared to buffalo milk.

#### Total solids:

It clearly indicated from Table 2 that the average total solids contents of the finished product were found to be 16.09, 18.19, 19.75 and 21.78 per cent for treatment T<sub>0</sub>, T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub>, respectively. The highest total solids content was recorded for treatment T<sub>3</sub> *i.e.* 21.78. The lowest total solids contents was recorded for treatment T<sub>0</sub> *i.e.* 16.09 (control). It was observed from above findings that as the blending of coconut milk was increased from T<sub>1</sub> to T<sub>3</sub>, the total solids content of the finished product was also increased.

#### Ash:

Table 2 indicated that mean ash content in the finished product was found to be 0.38, 0.42, 0.49 and 0.54 per cent for treatment T<sub>0</sub>, T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub>, respectively. All the treatments were found to be significantly different from each other. The values recorded were found to be increasing order from 0.38 to 0.54 for treatment T<sub>0</sub> to T<sub>3</sub>. This might be due to blending of coconut milk in increasing level with content of more amount of ash *i.e.* 0.9 per cent.

#### Carbohydrate:

It may be observed from Table 2, that the mean carbohydrate content ranged between 11.45 to 16.64 per cent. Whereas, the least value of carbohydrate content was recorded for T<sub>0</sub> treatment *i.e.*, 11.45 per cent. The values of carbohydrate content in all the treatments significantly differed from each other. It may be seen that the carbohydrate contents were found to be increasing order from T<sub>0</sub> to T<sub>3</sub>. It was due to the blending of coconut milk in increasing order.

#### Conclusion:

From present investigation it can be concluded that the coconut milk can be very well utilized for preparation of palatable refreshing *Lassi* by blending 10 per cent coconut milk with 90 per cent buffalo milk on weight basis. As regard to physico-chemical properties, the highest acidity was found in treatment T<sub>0</sub> (0.61 %). The moisture and fat, was higher in treatment T<sub>0</sub> and protein, ash and total solid, carbohydrate content was higher in treatment T<sub>3</sub>, comparatively adjacent values were found in T<sub>2</sub> combination also. It may therefore, be concluded that the blending of 10 per cent coconut milk in buffalo milk is fairly acceptable, physico-chemical and adaptable as far as processing technology is concerned.

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