

## **Standardization and Production of Traditional Indian Milk Product Basundi' from Cow Milk with Bottle Gourd Pulp**

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**Abstract:** A study on the standardization of "bottle gourd basundi" was carried out by using Cow milk and bottle gourd pulp. Milk was standardized to 4 % fat and 9% SNF. The attempts have been made to study the effect of different levels of bottle gourd pulp (5,10 and 15% w/w of condensed milk) and sugar at rate of 10 per cent common all treatment combination concentration on sensorial and chemical quality of bottle gourd basundi. The results have indicated that the product prepared with 10% bottle gourd pulp level and 10 percent sugar level had optimum colour and appearance, thickness, sweetness and flavour hence scored highest among all the treatments.

**Keyword:** Basundi, Cow milk, Khoa, Bottle gourd, Chemical and Sensory parameters .

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### **I. Introduction**

Basundi is traditional heat desiccated milk product delicacy having sweetish caramel and pleasant aroma, light to medium brown colour, thick body and creamy consistency with or without soft textured flakes that are uniformly suspended throughout the product. It contains all the solids of milk in an appropriate concentration plus additional sugar and dry fruits. It is consumed directly as a delicious sweet dish. It is most popular in Maharashtra, Gujarat and parts of Karnataka and is mainly prepared at home by the housewives on some special occasions like festivals, weddings etc. And relished due to its rich, caramel, pleasant and nutty flavor and thick consistency (Pagote, 2003).

Now-a-days, the popularity and demand of Basundi is increasing due to its delicacy. Hence its production and marketing is increasing in a few big cities of the country. With rapid expansion of urban and semi-urban areas, the demand for traditional dairy products is increasing at a fast pace. In spite of the fact that the dairy industry has made rapid strides in the last 3-4 decades, the methods of manufacture of the traditional products have remained essentially unchanged. The small-scale producers find it difficult to cope up with the increasing demand. Therefore, in recent times, attention is being focused either to scale-up the operation or to modify the technology so as to make it amenable to mechanization and continuous operation.

The unique adaptability of condensed milk based based sweet all over India. The unique adaptability of khoa in terms of its flavour, thickness to blend with a wide range of food adjust had permitted development of an impressive array of basundi varieties. In India for all the classes of people the vegetables like bottle gourd, red pumpkin, elephant foot yam etc are popular and regular consumed vegetable. Bottle gourd is a rich source of vitamin and minerals. It contains higher concentration of dietary fibre, Vit. A, C, E, K, B<sub>1</sub>, B<sub>2</sub>, B<sub>6</sub>, foliate, potassium, manganese, panthothenic acid, calcium, magnesium and phosphorus. . Bottle gourd is used for diabetics, heart problems, blood pressure and so many other ailments. Those who do not have any problems can also use this juice as a health tonic.

Now a days local producers are using only traditional basundi nothing use the vegetables. Therefore present study the vegetables like bottle gourd pulp used for the preparation of basundi

### **II. Materials And Methods**

#### **2.1 Preparation of bottle gourd pulp**

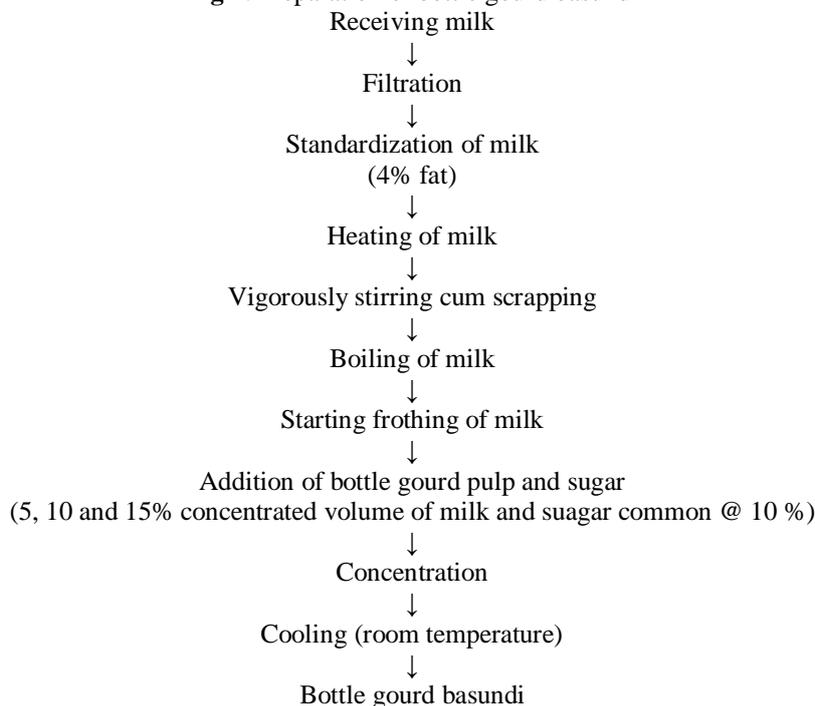
Elephant foot yam vegetable purchased from local market were washed with clean water. The skin was removed. Vegetable was cut in pieces/ slices with the help of knife and finally converted into homogenous pulp by using Deluzx pulp machine.

#### **2.2 Preparation of basundi**

The standardized cow milk bottle gourd basundi was prepared by the flow diagram given. For the preparation of bottle gourd basundi, Cow milk was procured from local milk producers and standardized according to Pearson's square method described by De (1980) to 4% fat and 9% SNF using Cow skim milk. The standardized milk was taken in stainless steel "karahi" and heated over a direct fire. For heating, medium LPG was used. The milk was stirred vigorously and constantly with a circular motion (clockwise) by a "khunti" so as

to avoid scorching the milk. As soon as the milk started boiling, constant evaporation of moisture took place. The speed of churning cum scrapping was maintained constantly to evaporate the maximum moisture as soon as possible. When the concentration of milk reached 2:1, add the three levels bottle gourd pulp (5, 10 and 15% w/w of concentrated milk) and sugar were added. After the addition of sugar the milk was continuously heated, stirred vigorously till the three levels of concentration were obtained. After the final concentration the product was transferred to aluminum tray and allowed to cool at room temperature to attain desired body and texture.

**Fig 1:** Preparation of bottle gourd basundi



### 2.3 Treatment details

T<sub>1</sub>- 0 parts of bottle gourd pulp + 100 parts of cow milk weight

T<sub>2</sub>- 5 parts of bottle gourd pulp + 95 parts cow milk weight

T<sub>3</sub>- 10 parts of bottle gourd pulp + 90 parts cow milk weight

T<sub>4</sub>- 15 parts of bottle gourd pulp + 85 parts of cow milk weight

The different levels were tried and compare with control (T<sub>1</sub>)

### 2.4 Chemical analysis

Fat content basundi as per Indian standards (Sp:18, part XI,1981), Protein by AOAC (2005), Sucrose volumetrically by Lane Eynon Indian standards (Sp:18, Part XI, 1981), Ash Indian standards (Sp:18, Part XI, 1981), and moisture Indian standards (Sp:18, Part XI, 1981).

### 2.5 Sensory evaluation

Sensory analysis carried out by panel of Judges in respect of color and appearance, Flavour body & texture. Sweetness and overall acceptability by 9 hedonic scale developed by Quarter master Food and Container Institute USA (Gupta 1976)

### 2.5 Statistical method

The data were analyzed statistically by using the completely randomized block design as per method described by Panse and Sukhatme (1967). The significance was evaluated on the basis of critical difference.

## III. Results And Discussion

### 3.1 Chemical composition

The chemical quality of finished product is presented in Table 1. The moisture content in the finished product of different treatment combinations were in the range of 33.46 to 41.14 per cent. The increasing moisture content was noted in the finished product, due to addition of varied proportion of bottle gourd pulp in cow milk. The fat content of bottle gourd basundi in all combination was different. Which decreased from 18.65

(T<sub>1</sub>) to 16.81 (T<sub>3</sub>). This might be due to decreasing levels of cow milk. The results obtained in the finished products were similar to those reported by Gaikwad and Hembade (2011). Similarly protein, carbohydrate and ash content in the finished product decreased.

### 3.2 Sensory evaluation

The sensory scores given for various samples are presented in Table 2. Basundi samples in which 10 per cent bottle gourd pulp was blended with cow milk scored the highest score (8.62). It was observed that increasing proportion of bottle gourd pulp in the blended in the cow milk decreased the score of colour and appearance of basundi. The score in respect of thickness ranged between 8.0 to 9.0 for T<sub>1</sub> and T<sub>3</sub> treatment combinations. The treatment T<sub>3</sub> was significantly superior over the rest of treatments. In case of flavour, the score recorded was highest in T<sub>3</sub>. In case of sweetness the mean score ranged from 8.0 to 8.5. It was lowest in T<sub>1</sub> and highest in T<sub>3</sub>.

**Table 1.** Chemical composition of bottle gourd basundi (per cent)

Treatments	Moisture	Fat	Protein	Sucrose	Ash
T <sub>1</sub>	33.46	18.62	10.25	35.63	2.03
T <sub>2</sub>	36.50	17.72	9.74	33.99	1.95
T <sub>3</sub>	39.70	16.81	9.23	32.35	1.87
T <sub>4</sub>	41.14	15.90	8.72	30.36	1.79
SE ±	0.011	0.035	0.011	0.011	0.018
CD at 5%	0.041	0.140	0.034	0.034	0.060

**Table 2.** Overall acceptability score of bottle gourd basundi

Treatments	Colour & appearance	Flavour	Thickness	Sweetness	Overall acceptability
T <sub>1</sub>	8.0	8.0	8.0	8.0	8.0
T <sub>2</sub>	8.0	8.5	8.0	8.5	8.25
T <sub>3</sub>	9.0	9.0	8.0	8.5	8.62
T <sub>4</sub>	8.0	8.5	8.0	8.0	8.12
SE ±	0.148	0.114	0.120	0.134	0.141
CD at 5%	0.450	0.370	0.368	0.408	0.438

### IV. Conclusion

It may be concluded that the superior, nutritional and medicinal quality bottle gourd basundi can be prepared by addition of 10 parts of bottle gourd pulp and 90 parts of cow milk by weight basis with addition of 10 per cent sugar.

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