



P-ISSN: 2349-8528

E-ISSN: 2321-4902

IJCS 2019; 7(3): 4162-4164

© 2019 IJCS

Received: 04-03-2019

Accepted: 06-04-2019

**Demgunde AM**

Department of Animal  
Husbandry and Dairy Science,  
College of Agriculture, Vasantryo  
Naik Marathwada Krishi  
Vidyapeeth Parbhani,  
Maharashtra, India

**Zine PL**

Department of Animal  
Husbandry and Dairy Science,  
College of Agriculture, Vasantryo  
Naik Marathwada Krishi  
Vidyapeeth Parbhani,  
Maharashtra, India

**Shinde AT**

Department of Animal  
Husbandry and Dairy Science,  
College of Agriculture, Vasantryo  
Naik Marathwada Krishi  
Vidyapeeth Parbhani,  
Maharashtra, India

## Preparation of cow milk basundi blended with red pumpkin pulp

Demgunde AM, Zine PL and Shinde AT

**Abstract**

The study was conducted on the topic "Studies on Preparation of Cow Milk Basundi with Red Pumpkin Pulp." The different levels of red pumpkin pulp was tried in cow milk basundi. The level of red pumpkin pulp 2.5, 5 and 7.5 per cent were selected on the basis of preliminary trials. After finalization of trials, the experiment was repeated for four times. After completion of each trial, the control as well as treatment products were analyzed for chemical composition (moisture, fat, protein, ash, carbohydrate, total solid and sucrose) and sensory analysis by panel of five judges on the basis of nine point hedonic scale. The results obtained were statistically analyzed by using completely randomized design. Observed the addition of red pumpkin pulp in cow milk basundi decreased (moisture  $49.32 \pm 0.22$  to  $46.30 \pm 0.13$  per cent, fat  $10.75 \pm 0.13$  to  $10.11 \pm 0.03$  per cent and sucrose  $16.88 \pm 0.05$  to  $16.21 \pm 0.02$  per cent) and increased (protein  $7.65 \pm 0.29$  to  $8.75 \pm 0.17$  per cent, ash  $1.85 \pm 0.06$  to  $2.65 \pm 0.06$  per cent, carbohydrate  $30.43 \pm 0.28$  to  $32.19 \pm 0.17$  per cent and total solid  $50.68 \pm 0.22$  to  $53.70 \pm 0.13$  per cent) content significantly in treated product as compared to control. Basundi with 2.5 per cent red pumpkin pulp had higher score for (flavour  $8.40 \pm 0.04$ , taste  $8.50 \pm 0.11$ , colour and appearance  $8.60 \pm 0.04$ , consistency ( $8.45 \pm 0.06$  and overall acceptability  $8.48 \pm 0.04$ ) than control basundi, (T0) as well as basundi with 5 and 7.5 per cent red pumpkin pulp (T2 and T3). Though sensory score was decreased at higher level of addition of red pumpkin pulp in basundi, however products at higher level of addition of red pumpkin pulp were acceptable.

**Keywords:** Chemical, cow milk basundi, red pumpkin pulp

**Introduction**

Cow milk is easily digested by infant and elders due to its low fat and protein content than buffalo milk, it contains carotene pigment which is highly antioxidant, hence cow milk is suggested over buffalo milk particularly for infants and elders, cow milk being less creamy and thick, it is utilized for preparation of *curds*, sweets that are *channa* based products like *sandesh*, *rasgolla*, *chumchum* and *rasmalai* and concentrated products such as *kheer*, *rabri* and *basundi*.

*Basundi* is traditional, concentrated and sweetened whole milk product 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. (Pagote, 2003) [7].

In recent years, a lot of interest has been generated in the development of milk product with vegetable, fruit and nuts based delicacies. Research workers have tried different vegetables, fruits and nuts in milk products such as a *gajar ka halwa*, *kaju burfi*, *sohan halwa*, with an aim to improve nutrient, fiber content, texture, mouth feel and flavor. Some of the milk product with vegetable and fruit based delicacies are very popular viz. bottle gourd *basundi*, red pumpkin *pedha* (Bhutkar *et al.*, 2015) [2, 3].

Among the different vegetables red pumpkin (*Cucurbita moschata*) belongs to family *Cucurbitaceae* is one of the best known sources of beta-carotene, a powerful antioxidant that gives orange vegetables and fruits their vibrant colour. Red pumpkin is rich sources of vitamins-A, C, E and K. It is excellent sources of many polyphenolic flavonoid compounds such as alpha, beta-carotenes, crypto xanthin, lutein and zeaxanthin, carotenes convert into vitamin A inside the human body.

**Correspondence****Zine PL**

Department of Animal  
Husbandry and Dairy Science,  
College of Agriculture, Vasantryo  
Naik Marathwada Krishi  
Vidyapeeth Parbhani,  
Maharashtra, India

## Objectives

1. To standardize the process preparation of cow milk *basundi* blended with *red pumpkin pulp*
2. To study chemical composition and sensory qualities of cow milk *basundi* blended with *red pumpkin pulp*

## Materials and methods

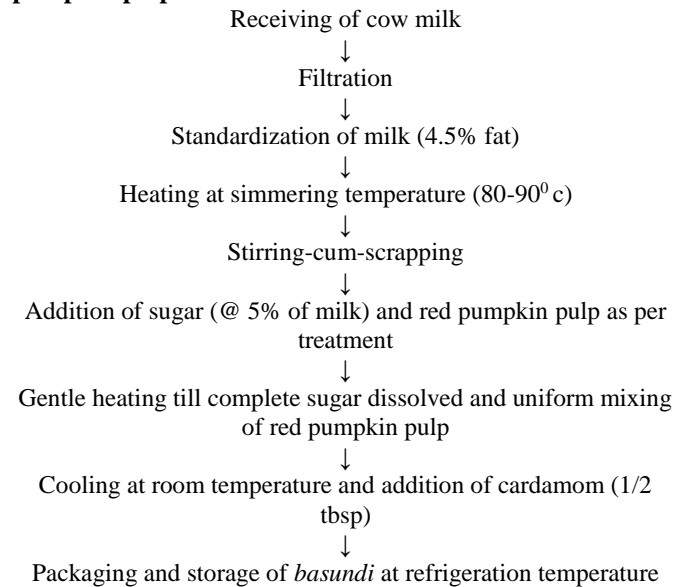
### Red pumpkin pulp

Good quality ripened fresh red pumpkin fruit was procured from local market of Parbhani. The fruit was washed with clean fresh potable water. The skin was removed and fruit was cut into pieces with the knife and seed was removed. The pulp of the fruit was made by using mixer cum grinder and under hygienic condition was used in *basundi*.

### Preparation of basundi

The standardized cow milk *basundi* with red pumpkin pulp was prepared by the flow diagram given. For the Preparation of Cow Milk *Basundi* with *Red Pumpkin Pulp*, cow milk was procured from Cattle Cross Breeding Project, VNMKV, Parbhani. and standardized according to Pearson's square method described by De (1980) to 4.5 % fat. 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 "kunti" 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 3:1, add the three levels red pumpkin pulp (2.5, 5, and 7.5 by weight of cow 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 cool at room temperature to attain desired body and texture.

## Flow diagram for preparation of *basundi* blended with red pumpkin pulp



### Treatment details

- T<sub>0</sub> = *Basundi* from cow milk (control)  
 T<sub>1</sub> = *Basundi* with 2.5 per cent of *red pumpkin pulp* by weight of cow milk  
 T<sub>2</sub> = *Basundi* with 5.0 per cent of *red pumpkin pulp* by weight of cow milk  
 T<sub>3</sub> = *Basundi* with 7.5 per cent of *red pumpkin pulp* by weight of cow milk

### Chemical analysis

Moisture content of *basundi* was determined by BIS (1981) [1], Fat by Gerber's described in BIS (1981) [1], Protein by Micro Kjeldhal method as described in BIS (1981) [1], Ash by BIS (1981) [1], Carbohydrate by subtraction method, Total solid by BIS (1981) [1], and Sucrose by BIS (1981) [1].

**Table 1:** Effect of cow milk *basundi* blended with *red pumpkin pulp* on chemical composition

Chemical Constituent	Treatment				CD (P < 0.05)
	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	
Moisture	49.32 ± 0.22 <sup>a</sup>	48.32 ± 0.22 <sup>b</sup>	47.17 ± 0.22 <sup>c</sup>	46.30 ± 0.13 <sup>d</sup>	0.73
Fat	10.75 ± 0.13 <sup>a</sup>	10.45 ± 0.18 <sup>ab</sup>	10.25 ± 0.06 <sup>b</sup>	10.11 ± 0.03 <sup>b</sup>	0.37
Protein	7.65 ± 0.29 <sup>b</sup>	7.75 ± 0.17 <sup>b</sup>	8.45 ± 0.23 <sup>a</sup>	8.75 ± 0.17 <sup>a</sup>	0.69
Total Carbohydrate	30.43 ± 0.28 <sup>c</sup>	31.26 ± 0.20 <sup>d</sup>	31.83 ± 0.08 <sup>ab</sup>	32.19 ± 0.17 <sup>a</sup>	0.62
Ash	1.85 ± 0.06 <sup>c</sup>	2.10 ± 0.15 <sup>bc</sup>	2.30 ± 0.14 <sup>ab</sup>	2.65 ± 0.06 <sup>a</sup>	0.36
sucrose	16.88 ± 0.05 <sup>a</sup>	16.52 ± 0.13 <sup>b</sup>	16.32 ± 0.07 <sup>bc</sup>	16.21 ± 0.02 <sup>c</sup>	0.26
Total Solid	50.68 ± 0.22 <sup>d</sup>	51.56 ± 0.32 <sup>c</sup>	52.83 ± 0.22 <sup>b</sup>	53.70 ± 0.13 <sup>a</sup>	0.73

Values are Mean ± Standard Error Value with different superscript are significantly differed at P<0.05

The chemical composition of finished product are presented in table 1. From the result it was observed that addition of red pumpkin pulp in cow milk *basundi* decreased moisture (49.32 ± 0.22 to 46.30 ± 0.13 per cent), fat (10.75 ± 0.13 to 10.11 ± 0.03 per cent) and sucrose (16.88 ± 0.05 to 16.21 ± 0.02 per cent) and increased protein (7.65 ± 0.29 to 8.75 ± 0.17 per cent), ash (1.85 ± 0.06 to 2.65 ± 0.06 per cent), carbohydrate (30.43 ± 0.28 to 32.19 ± 0.17 per cent) and total solid (50.68

± 0.22 to 53.70 ± 0.13 per cent) content significantly in treated product as compared to control.

### Sensory evaluation

Sensory evaluation of *Basundi* samples was carried out by using 9- point hedonic scale described by Gupta (1976). The product was evaluated for sensory attributes by the panel of 5 Semi Trained judges.

**Table 2:** Effect of cow milk *basundi* blended with *red pumpkin pulp* on sensory attributes

Treatment	Sensory Attributes				
	Flavor	Color and Appearance	Consistency	Taste	Overall Acceptability
T <sub>0</sub>	7.80 ± 0.09 <sup>b</sup>	7.60 ± 0.09 <sup>c</sup>	7.70 ± 0.08 <sup>b</sup>	7.75 ± 0.11 <sup>b</sup>	7.71 ± 0.04 <sup>c</sup>
T <sub>1</sub>	8.40 ± 0.04 <sup>a</sup>	8.60 ± 0.04 <sup>a</sup>	8.09 ± 0.06 <sup>a</sup>	8.50 ± 0.10 <sup>a</sup>	8.48 ± 0.04 <sup>b</sup>
T <sub>2</sub>	8.25 ± 0.06 <sup>a</sup>	8.35 ± 0.06 <sup>b</sup>	8.45 ± 0.04 <sup>a</sup>	8.30 ± 0.09 <sup>a</sup>	8.30 ± 0.02 <sup>b</sup>
T <sub>3</sub>	7.60 ± 0.09 <sup>b</sup>	7.50 ± 0.04 <sup>c</sup>	8.29 ± 0.06 <sup>c</sup>	7.60 ± 0.10 <sup>b</sup>	7.51 ± 0.05 <sup>d</sup>
CD P < 0.05	0.23	0.19	0.20	0.33	0.13

Values are Mean ± Standard Error Value with different superscript are significantly differed at P < 0.05

The sensory scores given for various samples are presented in table 2. It was observed that *basundi* with 2.5 per cent red pumpkin pulp rated higher score for flavour ( $8.40 \pm 0.04$ ), taste ( $8.50 \pm 0.11$ ), colour and appearance ( $8.60 \pm 0.04$ ), consistency ( $8.45 \pm 0.06$ ) and overall acceptability ( $8.48 \pm 0.04$ ) than control *basundi* ( $T_0$ ) as well as *basundi* with 5 and 7.5 per cent red pumpkin pulp ( $T_2$  and  $T_3$ ).

### Statistical analysis

Experiment was laid out in CRD with four replication and experimental data was analyzed as per the procedures given by Panse and Sukhatme (1967) [8].

### Conclusion

From the results of chemical and sensory analysis of cow milk *basundi* with addition of red pumpkin pulp (2.5, 5 and 7.5 per cent) it could be concluded that red pumpkin pulp could be incorporated up to 7.5 per cent in *basundi* without affecting sensory properties adversely.

Addition of *red pumpkin pulp* in *basundi* decreased moisture, fat, and sucrose content significantly in the finished product as compare to control.

Per cent protein, ash, carbohydrate and total solid content were increased significantly in treated product as compared to control.

### References

1. BIS. Hand Book of Food Analysis. XI Indian Standard Institution, Manak Bhavan, New Delhi, 1981.
2. Bhutkar SS, Patil DL, Rupanawar DA. Studies on Preparation of *Pedha* Blended with Red Pumpkin. IOSR. J of Agriculture and Veterinary Science. 2015; 8(3-I):01-03.
3. Bhutkar SS, Toraskar SD, Shinde PB. Standardization and Production of Traditional Indian Milk Product *Basundi* from Cow Milk with Bottle Gourd Pulp. IOSR J of Agriculture and Veterinary Science. 2015; 8(4-I):19-21.
4. Gupta SK. Sensory Evaluation in Food Industry. Indian Dairyman. 1976; 28(7):293-295.
5. IS: 1224 (Part II) Determination of Fat by Gerber's Method. Indian Standard Institution, Manak Bhavan, New Delhi, ISI, 1977.
6. Mukhekar AS. Preparation of *Basundi* Blended with Mango Pulp cv. Kesar. M.Sc. Agri. Thesis, Submitted to VNMKV, Parbhani, 2014.
7. Pagote CN. *Basundi*: A Traditional Delicious Milk Product. Beverage and Food World. 2003; 30(6):29.
8. Panse VG, Sukhatme PV. Statistical Methods for Agricultural Workers. ICAR Publication, New Delhi, 1967.