

Study on sensory evaluation of bottle gourd *Kheer*

R.R. SHELKE, V.M. THAKRE AND S.G. GUBBAWAR

ABSTRACT

In the present investigation the efforts were made to inquire into the superiority of vegetable-based milk product through appraisal of the nutritive advantage and evaluation of the commercial viability of the *hitherto* unexploited dimension of the blend of two highly nutritional food : cow milk and bottle gourd . Bottle gourd *Kheer* was prepared by blending various levels of shredded and pulped bottle gourd (10, 20 and 30 per cent) with cow milk and studied its effect on the sensory quality. Bottle gourd *Kheer* prepared from 20 per cent pulped bottle gourd and 80 per cent cow milk gave overall superior sensory quality while bottle gourd *Kheer* prepared from 80 per cent cow milk blended with 20 per cent shredded bottle gourd also gave an acceptable sensory quality. Because of medicinal value of bottle gourd it is as value addition in *Kheer* .

KEY WORDS : Bottle gourd , *Kheer*, Nutrition, Sensory evaluation

Shelke, R.R., Thakre, V.M. and Gubbawar, S.G.(2011). Study on sensory evaluation of bottle gourd *Kheer*, *Res. J. Animal Hus. & Dairy Sci.*, 2 (1&2) : 37-39.

INTRODUCTION

Dairying in India is diversified and agriculture based and a stepping stone towards socio-economic progress. The interdependence of dairy and food Industries is known since ancient times. This is due to the fact that no single food provides all the nutrients in the right quantity for good health. The dairy industry in India has made significant and enviable progress during the last three decades. More than 40 per cent of the total milk produced is utilized for making indigenous milk products. All this products are region or custom specific. Still they provide profitable outlet for milk in addition to preservation of precious milk solids for a longer time. They have got significant dietary and nutritional role. Many of them have social and ceremonial connection with society. However, their preparation mostly belongs to the house holds and unorganized sector. Only few of them are commercially exploited, it has been an established fact that the use of improper food perhaps is the root cause of every disease. Considering the growing awareness of consumers toward functional and health

food, dairy / food Industries have commercially exploited the major cereal based milk products *viz.*, *Kheer* and *Payasum* in the various parts of country.

Still, despite good nutritional and medicinal significance, some deep-rooted vegetable based milk delicacies remain confined to the domestic kitchen segment. This has the potential to alleviate the persistent malnutrition and unemployment problem in India. Vegetables have probably more important nutritive and medicinal value than any other group of foods for Indians. Additionally, vegetables add appetizing, colour, texture and flavour to the daily food.

Hence, in this research project, the efforts were made to inquire into the superiority of vegetable-based milk product through appraisal of the nutritive advantage and evaluation of the commercial viability of the *hitherto* unexploited dimension of the blend of two highly nutritional food : cow milk and bottle gourd . Bottle gourd or *lauki* grows well in India. The fruits are large, long with numerous long white seeds. Bottle gourd has great medicinal value eg. useful for relief in urinary disorders. In cooked form, it is diuretic, sedative and antibilious (Acharya Vishwamitra Sharma, 1998). Chemical composition of bottle gourd per 100g edible portion was analyzed and reported by Manay and Shadaksharaswamy (1995) as moisture 96.1g, protein 0.2g, fat 0.1g, minerals 0.5g, fibre 0.6g, carbohydrates 2.5g, energy 12 k.cal, calcium 20mg, phosphorus 10 mg, iron 0.7 mg, thiamine 0.3 mg, riboflavin 0.01 mg and niacin 0.2mg.

Correspondence to:

R.R. SHELKE, Department of Animal Husbandry and Dairying, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, AKOLA, (M.S.) INDIA

Authors' affiliations:

V.M. THAKRE AND S.G. GUBBAWAR, Department of Animal Husbandry and Dairying, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, AKOLA, (M.S.) INDIA

In south India no auspicious occasion is completed without testing the delicious *Payasum* made from milk and various other ingredients. (Unikrishnan *et al.*, 2000)

Objectives :

– To find out the optimum level of major and minor ingredients, to study the nutritional importance of major and minor ingredients and to analyze the acceptability and sensory score of the product.

MATERIALS AND METHODS

Materials:-

Cow milk :

Whole, fresh, clean cow milk was used for *Kheer* preparation (fat content 4.0 per cent).

Bottle gourd :

Good quality and fresh bottle gourds were purchased from local market.

Sugar :

Clean crystalline cane sugar available in local market was used.

Methodology:

Method for preparation of bottle gourd / Lauki / Dudhi *Kheer* :

– The product was prepared by shredding of the bottle gourd after peeling greenish yellow outer skin. The shredded gourd was fried in open pan with cow ghee till it became soft and then cooked in milk up to desired consistency. Sugar was used as sweetening agent. (T_1 , T_2 and T_3).

Treatments	2/3 concentrated milk (Per cent)	Bottle gourd (Per cent)
T_1	90	10 shredded
T_2	80	20 shredded
T_3	70	30 shredded
T_4	90	10 pulped
T_5	80	20 pulped
T_6	70	30 pulped

No. of replications : 05

– The product was prepared by pulping the bottle gourd after peeling greenish yellow outer skin.

Then pulp was fried in open pan with cow ghee till it became soft and then cooked in milk up to desired consistency. Sugar was used as sweetening agent. (T_4 , T_5 and T_6).

Step-I : Cow milk concentration as major ingredient and rate of sugar addition was decided by preliminary trials as 2/3 concentration of milk and 7 per cent sugar on the basis of quantity of milk utilized.

Step-II : Optimum level of blending of shredded and pulped bottle gourd was fixed as follows:

Sensory quality :

Bottle gourd *Kheer* samples were examined by a panel of 6 judges for colour and appearance, flavour, body and texture, overall acceptability to assess the sensory quality.

RESULTS AND DISCUSSION

In addition to above major ingredients milk contains sterol-0.30g, carotenoid-0.10, glucose-50mg, calcium-1.25g, phosphate-2.10g, citrates-2.00 g, chloride-1.00g and energy 75 calories (Day, 1977), and chemical composition for some minor ingredients of bottle gourd reported by Maney and Shadaksharaswamy (1995) as minerals 0.5g, fibre 0.6g, S 2.5g, energy 12 k.cal, calcium 20mg, phosphorus 10 mg, iron 0.7 mg, thiamine 0.3 mg, riboflavin 0.01mg and niacin 0.2mg.

Chemical composition of *Kaddu ki Kheer* is given by V. Unikrishnan *et al.* (2000) as total solid- 40.1 per cent, suspended solids- 11.9 per cent, fat-1.1per cent, protein – 1,2 per cent, lactose – 2.6 per cent and sucrose – 22.7 per cent.

Colour and appearance:

Kheer prepared from 20 per cent pulped bottle gourd and 80 per cent cow milk (T_5) obtained maximum score (18.72) for colour and appearance followed by *Kheer* prepared from 20 per cent shredded bottle gourd and 80 per cent cow milk (T_2) with score of 17.60. This variation treatments were may be due to more uniform and smooth texture. Both the significantly superior over T_6 , T_3 , T_4 and T_1 , with score of 17.32, 16.55, 16.15 and 15.13, respectively (Table 2).

Table 1 : Nutritive value / chemical composition of milk and bottle gourd(100 g edible portion)

Ingredient	Moisture	Fat	Protein	Carbohydrate	Ash	TS
Cow milk	86.42	4.55	3.33	5.04 (Lactose)	0.66	13.58
Bottle gourd (shreds)	96.1	0.1	0.2	2.5	0.5	3.9

Table 2 : Effect on sensory score on bottle gourd *Kheer*

Treatments	Sensory attributes (Mean values of score obtained for 5 replications)				Remarks on appearance
	Colour and appearance (20 marks)	Flavour (40 marks)	Body and texture (40 marks)	Overall acceptability (100 marks)	
T ₁	15.13	30.77	34.03	79.93	Loose and suspended , shreds feels
T ₂	17.60	37.27	37.30	92.17	Less loose and suspended , shreds feel
T ₃	16.55	33.38	35.32	85.25	More compact, shreds feel
T ₄	16.15	32.55	35.15	83.85	Loose, uniform, Soft and smooth
T ₅	18.72	39.15	38.25	96.12	Semisolid, More uniform, soft and smooth
T ₆	17.32	34.20	36.50	88.02	Compact, soft
SE (m)	0.144222	0.127083	0.179165	0.265428	
CD@5 %	0.432666	0.381248	0.537494	0.796284	
F TEST	Sig.	Sig.	Sig.	Sig.	

Flavour:

Kheer prepared from 20 per cent pulped bottle gourd and 80 per cent cow milk (T₅) got obtained maximum score (39.15) for flavour followed by *Kheer* prepared from 20 per cent shredded bottle gourd and 80 per cent cow milk (T₂) with 37.27. Both were significantly superior over T₆, T₃, T₄ and T₁, with score 34.20, 33.38, 32.55, and 30.77, respectively.

Body and texture:

Kheer prepared from 20 per cent pulped bottle gourd and 80 per cent cow milk (T₅) could obtain maximum score (38.25) for flavour followed by *Kheer* prepared from 20 per cent shredded bottle gourd and 80 per cent cow milk (T₂) with 37.30, Both the treatments were significantly superior over T₆, T₃, T₄ and T₁, with score of 36.50, 35.32, 35.15 and 34.03, respectively.

Overall acceptability:

Kheer prepared from 20 per cent pulped bottle gourd and 80 per cent cow milk (T₅) also has obtained maximum score (96.12) for overall acceptability followed by *Kheer* prepared from 20 per cent shredded bottle gourd and 80 per cent cow milk (T₂) with 92.17. T₅ and T₂ were

significantly superior over T₆, T₃, T₄ and T₁, with score 88.02, 85.25, 83.85 and 79.93, respectively.

Conclusion:

Overall bottle gourd *Kheer* prepared from 20 per cent pulped bottle gourd and 80 per cent cow milk gave superior sensory quality while bottle gourd *Kheer* prepared from 80 per cent cow milk blended with 20 per cent shredded bottle gourd also gave an acceptable sensory quality.

LITERATURE CITED

- De, Sukumar (1977). *Outline of dairy technology*. Oxford University Press, DELHI (India).
- Manay, N.S. and Shadaksharswamy, M. (1995). *Food facts and principles*, New Age International Publisher, pp.199-214.
- Sharma, Achrya Vishwamitra (1998). *Swasthyawardhak Sabjijan Aur Masale*. Manoj Publication ,Delhi, 27pp.
- Unikrishnan, V., Bhavadasan , M.K., Nath, B.S., Vedavathi, M.K.and Balsubramanya, N.N. (2000). Payasum – A sweet delicacy. *Indian Dairyman*, **52**, (10):.37-43.

