

Journal of Pharma Research Available online through www.jprinfo.com

Research Article ISSN: 2319-5622

Effect of Different Levels of Colostrum on Yield and Physico-Chemical Properties of Steam Sandesh

J. David

Professor, Department of Dairy Technology, Sam Higginbottom Institute of Agriculture, Technology and Sciences, Allahabad-211007, INDIA.

Received on: 20-11-2015; Revised and Accepted on: 27-11-2015

ABSTRACT

A study was conducted to utilize bovine colostrum for preparation of steam Sandesh, containing different ratios of colostrum and cow milk. Three ratios 50:50, 60:40 and 70:30 containing same level of fat% and different levels of SNF% were used. Freshly made chhana was broken into bits and mixed with groundsugar. Put the mixture in a stainless steel lunch box inside a pressure cooker with half of the lunch box dipped in water. Heated on a slow fire for 5 minutes, poured it into a tray and let it to cool and set. Now Sandesh is ready. Steam Sandesh having 50:50 ratios of colostrum and cow-milk was most acceptable, followed by 60:40, 70:30 and control Sandesh. The product was analyzed for organoleptic attributes (flavour and taste, consistency, colour and appearance and overall acceptability) by trained panelist using 9 point hedonic scale. Physicochemical (fat, total solids, acidity, protein, moisture) and microbiological (SPC, yeast and moulds, coliform) analysis were done for estimating its nutritional content and safety. Based on the statistical analysis of data obtained from various parametersusing different ratios of mixture, experimental treatments were found superior to control as far as organoleptic attributes are concern. Among the treatments the highest score was reported in T₁ followed by T₂, T₃&T₀. The data regarding cost ofControl andColostrum Steam Sandesh was found as cheap in T₁ (47.68 Rs/Kg), followed by, T₂ (55.08 Rs/Kg), T₃ (69.96 Rs/Kg), and T₀ (84.46 Rs/Kg).

Keywords: Cow milk, Colostrum, Steam Sandesh.

INTRODUCTION

 ${f S}$ andesh is a popular chhana based sweet. Sandesh (meaning "message") is perhaps the oldest sweet-meat of Bengal where there is a traditional custom to send some Sandesh along with a good message to relative and friends(David, 2013). Steam Sandesh (vapa) is one of the traditional milk products which are still very popular in Bengal. Generally the product is made from cow milk. The sweet is known for its palatability and aroma. It is a good source of milk protein and fat. Colostrums are breast milk produced after the birth of the new born and last for 2-4 days (Kaushik et,al., 2002). Colostrums are very important part of breast milk and lays down the immune system and confers the growth factors and other protective factors for the young ones in mammals. This is the source of passive immunity achieved by the mother and is transferred to the baby (Thapa, 2005). Bovine colostrums have been used in many disorders in human beings. Five different types of immunoglulins viz.Ig A,Ig D,Ig E,Ig G and Ig M have been isolated from colostrum. Bovine colostrum contains 8-25%, Ig G whereas human colostrum contain2%IgG. These are protein molecules, which have important role in the body to fight against infection (Davidson et.al.,1989). There is a need for utilization of colostrum to prepare Steam Sandesh as it will enhance the therapeutic value of the product which otherwise go as waste. Colostrum may be added with cow milk to get a better Sandesh. Keeping in mind the therapeutic properties and other nutritional uses of colostrum, an attempt has been made to explore the use of colostrum for manufacturing of Steam Sandesh using the method of manufacture as laid down by (Sen and Ragoria 1990).

MATERIAL AND METHODS

 ${f F}$ irst of all, cow milk containing 4% fat was used as control and for experimental treatments same level of fat% used but

*Corresponding author: J. David Professor, Department of Dairy Technology, Sam Higginbottom Institute of Agriculture,

Sam Higginbottom Institute of Agriculture, Technology and Sciences, Allahabad-211007, INDIA. *E -Mail: profjohndavid06@gmail.com different levels of SNF% was taken. In T₁ admixture of cowmilk and colostrums were 50:50 ratios (Fat 4%, SNF 14.65%), T₂ was 60:40 ratio (Fat 4%, SNF 13.40%) and T₃ was 70:30 ratios(Fat 4%, SNF 12.18%). Milk were heated at 70°C and coagulated by using 1% citric acid solution. Fresh chhana was broken into bits and sugar mixed into it @30% of dry matter. The mixture was kept in a stainless steel box and placed in a pressure cooker with half of the box dipped in water. It was then heated on a slow fire for 5 minutes. Afterwards the product was poured in a tray and left to cool and set. It was then cut into desired size and shape. Thus, the Sandesh was ready. Samples were tested for physicochemical parameters (fat, protein, T.S, acidity, & moisture) and microbiological (SPC, yeast and moulds, coliform) as per procedure given in the food chemistrymanual of Allahabad Central University. Organoleptic attributes were judged by trained panelist using 9 point hedonic scale.

The data collected on different aspects as per plan were tabulated and statistically analyzed as per (Chandel, 1991).

RESULTS AND DISCUSSION

Table-2 shows average of different parameters studied. Moisture percentage:

There were no significant difference found in average moisturepercentage ofSteam Sandesh of control and experimental samples. The highest moisture percentage was recorded as 33.7 in T_{3} followed by 33.10 in T_0 , 31.7 in T_2 and 31.3 in T_1 . The differences in these were non-significant. F value was 2.46, indicating no significant effect of treatment on moisture percentage.

Table No. 1: Details of different treatments ofControl and Colostrum Steam Sandesh

Materials	Different treatments(Control and Colostrum Steam Sandesh)					
	T ₀	T ₁	T ₂	T ₃		
Cow milk	100	50	60	70		
Colostrum	-	50	40	30		



Fig. 1: Flow chart for preparation of Control and Colostrum Steam Sandesh

Table No. 2: Physicochemical parameters and yield of Control and Colostrum Steam Sandesh

Parameters(%)	Control and Colostrum Steam Sandesh				F value	C.D.
	T ₀	T ₁	T_2	T ₃		
Fat	17.36	15.82	16.21	16.09	13.84*	0.63
Total Solids	66.9	68.7	68.3	66.3	2.29**	-
Protein	18.1	23.0	20.6	18.7	20.50*	1.43
Acidity	0.14	0.19	0.18	0.16	20.34*	0.013
Moisture	33.10	31.30	31.70	33.70	2.46**	-
Yield	23.17	25.44	24.75	16.39	5.18*	1.34
aa						

* Significant at 5 % level;

** Non-significant at 5 % level

Fat percentage:

The highest fat percentage in the steam Sandesh was obtained in T_0 (17.36), followed by T_2 (16.21), T_3 (16.09) and T_1 (15.82). The differences in these were significant. There were significant difference found in average fat content of Steam Sandesh of control and experimental samples. F value was 13.84, indicating significant effect of treatment on fat percentage.

Protein percentage:

The average protein percentage in different treatments differed significantly. The highest percentage of protein was recorded 23.00 in T_1 , followed by 20.6 in T_2 , 18.70 in T_3 and 18.10 in T_0 . The differences in these were significant. F value was 20.50, indicating significant effect of treatment on protein percentage.

Total solids:

Highest percentage of total solids was recorded as 68.70 in T_1 , followed by 68.30 in T_2 , 66.90 in T_0 and 66.30 in T_3 . F value was 2.29, indicating significant effect of treatment on total solids. The differences in these were non-significant.

Acidity:

Highest percent acidity of steam sandesh was observed as 0.19 in T_1 , followed by 0.18 in T_2 , 0.16 in T_3 and 0.14 in T_0 . There were significant differences found in average acidity (%) of steam sandesh of control and experimental sample. F value was 20.34, indicating significant effect of treatment onacidity.

Yield:

The maximum yield of steam sandesh (25.44) was obtained for treatment T_1 followed by T_2 (24.75) and T_0 (23.17), whereas the minimum yield (16.39) was found in T_3 . There was significant difference found in average yield (%) of steam sandesh of control and experimental samples.F value was 5.18, indicating significant effect of treatment onyield.Thus, the data showed the experimental product was a good as control.

Cost Analysisof control andColostrum Steam Sandesh:

The data regarding cost of Control and Colostrum Steam Sandesh was found as cheap in T₁ (47.68 Rs/Kg), followed by, T₂ (55.08 Rs/Kg), T₃ (69.96 Rs/Kg), and T₀ (84.46 Rs/Kg) (Table.4 and Fig.3).





Table No. 3: Cost Analysis of control andColostrum Steam Sandeshin the year 2009-10.

Parameters	ters Control andColostrum Steam Sandesh						
	T ₀	T ₁	T ₂	T ₃			
Cost(Rs/Kg)	84.46	47.68	55.08	69.96			

Journal of Pharma Research 2015, 4(11)

J. David, J. Pharm. Res. 2015, 4(11), 376-378



Fig. 3: Cost Analysis of control andColostrum Steam Sandesh

CONCLUSION

On the basis of results obtained it can be concluded that colostrum can be successfully used for improving sensory quality and therapeutic value of Steam Sandesh. Treatment T_1 was the best as per as overall acceptability concern. The data regarding cost ofControl andColostrum Steam Sandesh was found as cheap in T_1 (47.68 Rs/Kg), followed by, T_2 (55.08 Rs/Kg), T_3 (69.96 Rs/Kg), and T_0 (84.46 Rs/Kg).

REFERENCES:

- Chandel S.R.S. A handbook of agriculture statistics, 8th Ed, 1991.
- 2. David J. Acid coagulated milk products. In, *Technological advances in indigenous milk products*. kitab mahal, New Delhi, **2013**; pp 68-137.
- 3. Davidson G, Whyte P and Daniels E. Passive immunization of children with bovine colostrum containing antibodies to human rotavirus. *Lancet*, **1989**; 2: 709-712.
- Kaushik S, Trivedi S.S and Jain A. Unusual changes in colostrum composition – a pilot study, *Indian J. clinical biochemistry*, 2002; 17: 68-73.
- 5. Sen D.C. and Ragoria G.S. Production of soft grade sandesh from cowmilk. *Indian Journal of Dairy Science*, **1990**; 42(2): 241-247.
- 6. Thapa B.R. Indian journal of pediatrics, **2005**; vol. 72.

How to cite this article:

J. David: Effect of Different Levels of Colostrum on Yield and Physico-Chemical Properties of Steam Sandesh, J. Pharm. Res., 2015; 4(11): 376-378.

Conflict of interest: The authors have declared that no conflict of interest exists. Source of support: Nil