

ECONOMICS OF PEDA BLENDED WITH JAGGERY POWDER

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ABSTRACT

The investigation was planned to ascertain the optimum quantity of jaggery powder to substitute sucrose in Peda, a popular festive dairy dessert. Various levels of the jaggery powder viz. 31, 41 and 51% was used to substitute sucrose. The control and experimental samples of different treatments were analyzed for organoleptic qualities (color and appearance, flavor, body and texture, and overall acceptability) by using 9-point Hedonic scale. It was observed that the standardized Peda containing 41% jaggery powder and 59% sucrose (S2) was at par with the control containing 100% sucrose as far as its sensory attributes are concerned. It was seen that the sample S2 was most acceptable than other combinations of jaggery peda). It was concluded that the Peda can be prepared by replacing 41% sucrose with jaggery and thus would be a best option for the diabetic consumers. The cost of production for a kg of the product S0, S1, S2 and S3 was Rs. 792, 726.38, 702.44 and 681.42 respectively.

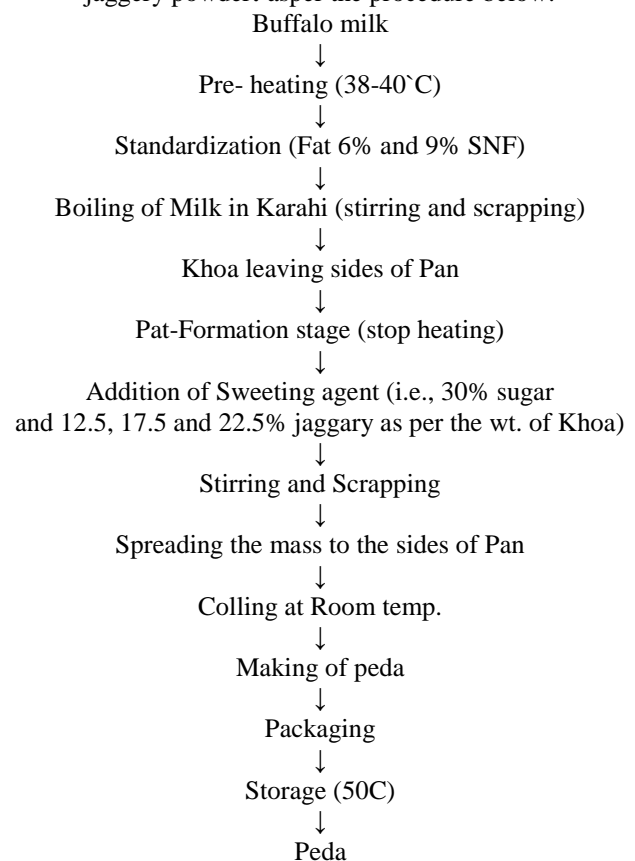
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Introduction

India produces about 221.06 million tons of milk annually, out of which about 50-55 % of milk produced is being converted into variety of traditional Indian dairy products. The Peda is a traditional dairy product especially prepared on household level on festive occasions in India and adjoining countries. It is consumed by most of the people almost all around the world. The basic ingredients for its preparation are khoa and sugar. It is a popular product in all Indian states as it is rich in nutrients and its unique aesthetic flavor and test. Peda is also a khoa-based indigenous dairy product, popular throughout India. Several types of peda are produced in different regions of the country with modifications in the process i.e., Doodh peda/ Mathura peda (Uttar Pradesh), Kunthalgiri peda (Maharashtra), Dharwad peda (Karnataka), lal peda (Eastern Uttar Pradesh) and bal mithai (popular in Uttarakhand, caramelized and coated with crystal sugar). Peda is generally prepared by mixing khoa and sugar in the ratio 3:1, the mixture is heated on gentle fire, stirred till the mixture attains a relatively firm texture. The content is mixed thoroughly and made into balls of 15-25 g size by rolling between the palms. The balls are flattened to give the disc shape (Aggarwal et al., 2018). Dies and moulds may also be used to shape them. The organized dairy sector is yet to accept Peda as a commercial product. Since its manufacturing it does not need special equipment and it seems to be the only economical product for small quantity surplus milk at cottage level. The sugar and jaggery are the sweeteners; the process of its manufacture is different. In manufacture of Jaggery Peda is far better than white sugar Peda, which predominantly contains sucrose ($C_{12}H_{22}O_{11}$), with traces of mineral salts, iron and some fiber. Different definitions of

dietetic dairy products, such as those involving high-strength sugars and bulk fillers like sucralose, sorbitol, and aspartame, have been suggested by various workers. The demand for value added products especially traditional dairy products is increasing day by day and the dairy industry of the country is trying to meet the present demand. Keeping this in view, the present investigation was undertaken to prepare Peda blended with jaggery powder and to study its cost of production.

Fig 1. Flow chart of preparation of Peda blended with jaggery powder: as per the procedure below:



(Gavhane et al., 2014)

Method

The present investigation was carried out in the Deptt. of Dairy Sci. Research Centre, Yeshwant College, Nanded in Maharashtra. An attempt was made to replace white sugar with jaggery powder. It was done to add value to the *Peda* by replacing three levels of white sugar *i.e.*, 31, 41, and 51% with jaggery powder.

Statistical analysis: The Completely Randomized Design with three replications was used for the data analysis (Panse & Sukhatme,1985). The effect of all treated samples and their interaction were studied on the sensory quality of the product (Gupta, 1976).

Determination of cost of the product: The cost of production of *Peda* was calculated at the prevailing prices of raw materials purchased from the local market of Nanded MS and expenses on labour, fuel, packaging etc. The prices were as per the prevailing market rates during study period (2023-2024).

Results And Discussion

Peda and *Burfi* are the two major khoa based sweets, which are highly popular among Indians, mainly because of their delicious taste and high nutritional value (Shinde,et al.,2018).The cost of the ingredient is very important factors in determining the cost of production of *peda*. It is the basis for deciding the price and determining the extent of profit. The *peda* was prepared from

buffalo milk *chakka* by partially replacing white sugar with different levels of jaggery powder. The cost of the lab-made *peda* was calculated and depicted in the table. It is observed that the production cost for one kg of *peda* from the treatments S₀, S₁, S₂, and S₃ was Rs.792,726.38,702.44 and 681.42 respectively. The cost of production from treatment S₃ was comparatively lower than the S₁, S₂, and S₀. The lowest cost was observed for treatment S₃. Similar trend observed Gavhane et al., 2014 cost structure of product was decreased from Rs. 152.42 to 150.29 as compared to control Rs. 153.53. The jaggery powder was used as it is a health-friendly (prepared without using any chemicals) and as a cheap source of carbohydrates, proteins, minerals and some vitamins. The results obtained from the study with relevant discussion thereon has been presented. The data obtained on its cost of production are tabulated analyzed within and between the treatment combinations. Incorporation of three different levels of jaggery powder on the physico-chemical attributes, overall acceptability and cost of production was studied. It was found that the product obtained by addition of 41% jaggery powder was found to be acceptable as far as organoleptic score was concerned thus *peda* could be prepared and made available at an affordable price for the rural masses on one hand and to the health conscious people on the other.

Table 1. Economics of *peda* prepared by replacing sugar with jaggery powder

Ingredients	Rate in Rs. per kg/lit	Control		Experimental					
		S ₀		S ₁		S ₂		S ₃	
		Qty. (L./g.)	Cost. (Rs.)	Qty. (L./g.)	Cost. (Rs.)	Qty. (L./g.)	Cost. (Rs.)	Qty. (L./g.)	Cost. (Rs.)
Buffalo Milk	54	1000	54	1000	54	1000	54	1000	54
Sugar(kg)	40	300	12	-	-	-	-	-	-
Jaggery powder(kg)	500g	-	-	31	2.48	41	3.28	51	4.8
Nutmeg (no)		1	2	1	2	1	2	1	2
LPG fuel charges/hr.	1100/14.2 kg	0.22 Kg gas/1 Kg <i>Peda</i> (0.32kg gas)	25		25		25		25
Labour/hr.	300/8hrs.	2.72hrs. @90 min/kg	102		102		102		102
Miscellaneous			3		3		3		3
Total product Yield obtained(g)		250	-	260	-	270	-	280	-
Total Rs. Cost of <i>peda</i> Obtained			198		188.86		189.66		190.80
Total Cost of <i>Peda</i> obtained/kg. (Rs.)			792		726.38		702.44		681.42
Total Production Cost for 100g (Rs.)			79.20		72.68		70.24		68.14

Conclusion

From the present investigation, it is concluded that the *peda* prepared with 41% jaggery powder (S_2) is more acceptable. The cost of product can be reduced by using jaggery powder. It is concluded that the cost of production of *peda* using different levels of jaggery powder is higher than control. The cost of production of *peda* control (S_0) was Rs. 792 and 702.44 developed jaggery *peda* (S_2) respectively. *Peda* can be prepared by blended with jaggery powder and can suitably employ for commercial production

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