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Cost analysis of low-calories and low-sugar *kalam*

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Abstract

The low-calories and low-sugar *kalam* was prepared by using maltodextrin, sugar and aspartame in suitable combination after optimization in the laboratory of Department of Animal Husbandry and Dairy Science, College of Agriculture, Latur, VNMKV, Parbhani during the year 2016-17. The developed product was analyzed for sensory evaluation by serving the product to 100 consumers. The selections of consumers were done purposefully among diabetic, heart disease, obesity and normal consumers with considering their age profile. The formulation of buffalo milk with 3 per cent fat, 1 per cent maltodextrin (on the basis of milk) and 10 per cent sugar & 0.10 per cent aspartame (on the basis of *khoa*) were found suitable for preparation of low-calories and low-sugar *kalam*. The developed *kalam* samples were tasted for 100 consumers selected at randomly on the basis of age, sex and health groups. It is concluded that 55 consumers suffering from diabetic, heart diseases and obesity, 33 consumers liked the developed *kalam* extremely and liked very much. The cost of developed *Kalam* was carried out by calculating current market rates.

Keywords: Low-calories, Low- sugar, *Kalam*, cost analysis

Introduction

In India most of traditional dairy product contains high fat and also high sugar (Pal & Raju, 2007) [6]. *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. It has been reported that the quantity of *peda* produced in India exceeds any other indigenous milk based sweet (Mahadevan, 1991) [4]. Fat replacers sometimes referred as fat substitutes or fat replacements are ingredients that mimic some of the roles of fat in food processing. The ideal fat replacer is a safe compound consumed with no health risk. It has all the functional and organoleptic properties of fat (taste and appearance characteristics such as richness, flakiness and sheen) with significantly fewer calories than fat (Hope Warshaw and Marion Franze, 1996) [3].

It can serve as an excellent carrier product for extra nutrient and if enriched or fortified it can satisfy the nutritional needs of the people. In India most of traditional dairy food contains high fat and also high sugar (Pal & Raju, 2007) [6].

Kalam: *Kalamis* a popular heat desiccated traditional dairy delicacy of Maharashtra specially Parbhani district in Gangakhed talukas. It is prepared by blending of *khoa* and sugar followed by heat desiccation until characteristic light brown colour appears. It is a nutritive, palatable and a very good source of energy.

Consumer response of low-calories and low- sugar *Kalam*

The actual consumer cost of newly developed low-calories and low-sugar *Kalam* and normal *Kalam* was carried out by taking current market prices of ingredients.

Material and methods

Low-calories and low sugar *kalam* was prepared in the Department of Animal Husbandry & Dairy science, Latur.

Buffalo Milk: Buffalo Milk was standardized to 3 % fat & 9 % SNF.

Artificial sweetener: Artificial sweeteners i.e. Aspartame was purchased from College of Agriculture, Latur.

Sugar: Good quality sugar was obtained from the local market of Latur.

Bulking agents: High quality bulking agents i.e. Maltodextrin was purchased from College of Agriculture, Latur.

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Statistical analysis

All the data were expressed as mean \pm standard deviation of mean and was calculated from three independent experiments. One-way analysis of variance (ANOVA) using Completely Randomized Design (CRD) was applied.

Cost analysis of developed Low-calories and low-sugar *Kalam* and normal *Kalam*

The cost analysis of developed Low-calories and low-sugar *Kalam* and normal *Kalam* is given in following table. The cost analysis of developed *Kalam* on the basis of current market price is discussed in following heads.

Table 1: Estimated cost of production of Low-calories and low-sugar *Kalam*

Ingredient required	Rate (Rs)	Low-calories and Low- sugar <i>Kalam</i>		Normal <i>Kalam</i>	
		Quantity	Cost (Rs.)	Quantity	Cost (Rs.)
Milk (6 % fat)	50/Lit.	--	--	5 Lit	250.00
Milk (3 % fat)	50/Lit.	5 Lit.	250.00	--	--
Fat removed		0.15 kg	--	--	--
Ghee obtained	400/kg	0.10 kg	40.00	--	--
<i>Kalam</i> obtained		1.20 kg	--	1.30 kg	--
Sugar	40/kg	102 gm @ 10 %	4.08	309 gm @ 30 %	12.36
Maltodextrin @1% on the basis of milk	36/kg	50 gm	1.80	--	--
Aspartame	1100/Kg.	1.8 gm	1.98	--	--
<i>Kalam</i> obtained		1.40 Kg.	297.86	1.82 Kg.	
Labour	300/8 hrs.	2.10 hrs@90 min/kg	78.75	2.73 hrs. @90 min/kg	102.38
Fuel	456/14.2 kg	0.22 Kg gas/1 Kg <i>Kalam</i> (0.313 kg gas)	10.05	0.22 Kg gas/1 Kg <i>Kalam</i> (0.400 kg gas)	12.84
Misc.	--	--	10.00	--	10.00
Total cost			396.66		
Cost of ghee			40.00	--	--
Total cost after reducing cost of ghee			356.66		387.58
Cost Rs. /kg			254.75		212.95

The Low-calories and low-sugar *Kalam* has been developed for a target group consisting of obese, calorie conscious, diabetic and the persons suffering from heart problems. There is rise at alarming rate in worldwide population suffering from above mentioned ailments and there is growing concerns for wellness among these masses, there exists a huge potential market for such developed products. The production cost is the one of the important considerations for establishing the project. The production cost (Table 1) of developed *Kalam* was worked out by taking cost of ingredients from current market rates. The total cost of production of Low-calories and low-sugar *Kalam* was estimated as Rs. 254.75/ Kg. whereas the cost of normal *Kalam* was Rs. 212.95/ Kg. The cost of production of developed *Kalam* is quite higher as compared to normal *Kalam*. The developed *Kalam* was costlier than control *Kalam* by Rs. 41.80 / Kg. So, it is clear from analysis that the cost of production of low-calories and low-sugar *Kalam* is quite expensive as compared to normal *Kalam*. The developed *Kalam* with health benefits is expected to impart all health benefits of low fat and low sugar effective for diabetes and peoples suffering from heart related problems and gives equivalent pleasure, taste and mouth feel as that of conventional *Kalam* to health-conscious populations. In the current food regime, where the consumers are ready to pay out extra money for such health beneficial product which possess nutritional quality like low-calories and low-sugar in the current available conventional *Kalam*.

Conclusion

From consumer response trial it is quite logical to conclude that the Low-calories and low-sugar *kalam* received wide acceptance by all group of consumers specially those consumers suffering from various diseases like diabetes, obesity and heart related problems. It is believed that the product surely shall attract a very wide market acceptance.

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