SHORT COMMUNICATION

Cost estimation and consumer acceptance studies of herbal *burfi*

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Abstract: Traditional Indian dairy product has huge liking throughout the length and breadth of our country as well as abroad in the Indian diaspora. However, increasing health consciousness among the consumers has resulted into shift in their demand to functional foods. Many reports have highlighted the scope of further enhancing traditional dairy foods market by increasing their functionality, however very limited literature is available regarding their market prospects. The present study was conducted to estimate the production cost of herbal *burfi*, rich in anti-oxidative activity, in comparison to control *burfi* and also the market potential of the same. Herbal essential oil incorporation resulted into increase in INR 6/- of the raw material cost and thus the production cost of herbal *burfi* was INR 6/- (2.75%) was higher than that from control *burfi*. Consumer survey of the developed product revealed that 22.73% of the respondents rated the product 'excellent' and 92.86% of 154 respondents were ready to purchase the product, when available in market even at slightly higher price.

Keywords: *Burfi*, Consumer acceptance, Production cost

Traditional Indian dairy products have a huge demand, while their domestic markets are well established, global market appears as silver lining for large Indian diaspora living abroad. However, in order to survive and to cope up with the ever rising functional food market, improvement in functionality and novelty in traditional dairy product is immensely required. *Burfi*, a popular *khoa* based sweetmeat, rich in essential nutrients (Palit and Pal, 2005; Rathod and Khamrui, 2015). It is needless to say that herbs such as turmeric, ginger, cardamom possess superior antioxidant properties. Along with that they have anti-mycotic, anti-carcogenic, anti-diabetic, anti-bacterial, anti-viral, hypotensive, hypocholesteremic properties (Hussain *et al.*, 2015). Hence, these herb will not only provide better shelf-life with antioxidant properties but also addition benefits. Prasad *et al* (2017a,b) reported increase in anti-oxidant activity of *burfi* upon incorporation of herbs into it. Incorporation of ginger into rye bread increased its shelf life by delaying lipid oxidation (Zieliński, *et al.*, 2012). Buch *et al.*, (2014) reported increased keeping quality of *paneer* upon incorporation of turmeric into it. Studies regarding preparation of herbal *burfi*, its anti-oxidant properties and shelf-life studies were reported earlier.

This document focus on production cost estimation and consumer acceptance of herbal *burfi*. Market acceptance and sustainability of newly develop product depends on it cost and consumer acceptance studies. Earlier, some workers have done similar studies for dietetic *burfi* (Prabha, 2006), Dietetic *peda* (Rathod, 2013) which was taken as base studies for calculation of cost and consumer survey.

Preparation of herbal *burfi* for consumer survey: *Burfi* was prepared by atmospheric desiccation of standardized milk using the method of Prasad *et al* (2017c).

Cost of production of herbal *burfi* was calculated as per the method followed by Prabha (2006) considering the prevailing price of all ingredients being used in the product manufacturing.

154 respondents were randomly selected from among residents, staff and students of National Dairy Research Institute (Karnal) fairly representing a cross-section of the social 33 strata. Each

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Fig.1 Consumer response to the developed herbal burfi **Table 1** Estimated cost of raw materials and services required for production of 1kg each of control and herbal *burfi*

Ingredients/ Services	Rate (INR/kg)	Control <i>burfi</i>			Herbal <i>burfi</i>		
		Quantity	Price (INR)	Cost (% share)	Quantity	Price (INR)	Cost (% share)
Milk (6% fat)	50	3.25	162.50	90.03	3.25	162.50	87.13
Sugar	60	300 g	18.00	9.97	300 g	18.00	9.65
Herbal EO	10/ml	-	-	0.00	600 ppm	6.00	3.22
Total cost of raw material	-	-	180.50	100	-	186.50	100
Raw material	-	-	180.50	82.59	-	186.50	83.06
Labor	-	-	5.56	2.54	-	5.56	2.48
Electricity	-	-	0.76	0.35	-	0.76	0.34
Water	-	-	0.12	0.05	-	0.12	0.05
Steam	-	-	2.08	0.95	-	2.08	0.93
Refrigeration	-	-	0.52	0.24	-	0.52	0.23
Administration & Supervision	-	-	10.72	4.91	-	10.72	4.77
Store maintenance	-	-	1.36	0.62	-	1.36	0.61
Quality Assurance	-	-	0.72	0.33	-	0.72	0.32
Packaging	-	-	10	4.58	-	10	4.45
Depreciation	-	-	5.92	2.71	-	5.92	2.64
Sundries	-	-	0.28	0.13	-	0.28	0.12
Total	-	-	218.54	100	-	224.54	100

respondent was given a 15-50 gms (1-5 pieces) of herbal *burfi* and a questionnaire and their responses were recorded.

Cost is of prime consideration for any product. With increasing awareness, consumer are more calculative towards what they spent and what they get. So, still when it comes to a buying decision, cost has huge weightage. Consumer compare different brands for price as well as quality. Either side of coin, cost also matters a lot for the manufacturer. Manufacturing cost is one of the important considerations for establishing a remunerative project. In present studies, cost is calculate based on commercial set up. Here assumption was taken that herbal *burfi* was manufactured in the Experimental Dairy of the Institute, considering production of 4906 packages (of 1 kg each) per day. As the prime objective of this exercise was to estimate the increase in cost of herbal *burfi* with respect to control *burfi*. Data provided by Prabha (2006) for various operational costs were used based upon percentage cost of raw materials. Raw material cost (Table 1) was calculated considering the prevailing prices of ingredients in the local market.

Total cost of raw material for herbal *burfi* was found out to be INR 186.50 which was INR 6 (3%) higher than that from the raw material cost for control or control *burfi* (INR 180.50). Addition of essential oil to *burfi* did not increase the cost of raw materials to a large extent. Further, sugar comprised 9.97 and 9.65% of the total cost of raw materials in preparation of control and herbal *burfi*.

Percent break-up of major manufacturing cost items are presented in Table 1. The total cost of production was estimated to be INR 224.54 for herbal *burfi* and INR 218.54 for control *burfi*. It could be inferred that increase in cost of herbal *burfi* (2.75%) as compared to that of control *burfi* is due to the addition of herbal essential oil into it. Comparing 2.75% increase in cost with 33% increase in shelf life (from 6 to 8 days) of *burfi* with incorporation of herbal essential oil at 37°C, it could be concluded that herbal *burfi* is more profitable as compared to control *burfi* owing to its higher shelf life. Further, tag of “herbal product” seems to fetch more customers as compared to “control product” with a difference of only 2.75% in their costs.

Customers are thought to be the real judges of any product. Consumer survey of developed herbal *burfi* was done with an intention to judge the probability of products success, when launched in the market. 154 respondents, representing a range of income groups and age groups, were provided with herbal *burfi*. Respondents comprised 53.25% males and 46.75% females. The consumer's preference for conventionally available *burfi* is presented in Table 1. It was found that around 65% of the respondents consume *burfi* at least once in a week. But all the consumers of the survey had the experience of consuming *burfi* earlier (Table 1).

Consumers' rating of the newly developed herbal *burfi* is pre-

sented in Fig 1. It can be seen that consumers liked the product well, with 22.73% of respondents rated it “excellent” and 56.49% as “very good” (Fig 1). It can be seen that the new product has high probability of success in the market as 92.86% respondents were ready to purchase the product even when it was priced slightly higher than those available in the market (Fig 1).

Conclusions

Considering current scenario, people are more inclined towards new herbal products having health benefits. Herbal *burfi* has an additional health benefits and extended shelf-life than conventional one. Herbal *burfi* can be highlighted under the class of health beneficial foods with marginal increase cost. Consumer are willing to buy herbal *burfi* with slightly higher price as they are getting additional benefits with small elevated price. From the manufacturer point of view, herbal *burfi* will be profitable as it cost effective as well good consumer acceptance.

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