Studies On Preparation Of *Burfi* Blended With Finger Millet

A. K. GORE

DEPARTMENT OF BOTANY AND HORTICULTURE

YESHWANT MAHAVIDYALAYA NANDED (MS)

ABSTRACT

In the present research Indian traditional dairy product *burfi* was prepared by blending finger millet with *khoa* in the different proportions like T_1, T_2, T_3, T_4 and T_0 as 97 parts of buffalo milk *khoa* by weight and 3 Parts of Finger millet, 94 parts of buffalo milk *khoa* by weight and 6 parts of finger millet, 91 parts of buffalo milk *khoa* by weight and 9 parts of finger millet, 88 parts of buffalo milk *khoa* by weight and 12 parts of finger millet and 100 parts of buffalo milk *khoa* by weight without finger millet respectively. The aim of the investigation was to optimize the level of finger millet in *burfi,* to access the sensory properties of finger millet *burfi,* to study the chemical composition of finger millet *burfi* and to study the textural properties of finger millet *burfi.* The results revealed that all the sensory evaluation parameters like colour & appearance, flavour body & texture and overall acceptability values decreased as the percentage of finger millet in the *burfi* increased. Chemical composition parameters like moisture, fat and protein decreased with increase in the percentage of finger millet in the final product while carbohydrate, total solids and ash per cent increased with the increase in the finger millet percent in the finger millet burfi. The overall textural profile of *burfi* showed that sample T_1 was superior to that of T_0, T_2, T_3 and T_4 treatments. From the investigation, finally it is concluded that the *burfi* blended with 3 per cent finger millet powder is more nutritious, acceptable and cheap for consumers

INTRODUCTION

India is emerging as a highest milk producing country in the world. Nearly 56 per cent of total milk produced in India is utilized for preparation of variety of traditional milk products i.e. *ghee*, *curd*, *khoa*, *butter*, *milk powder*, *paneer*, *chhana* etc. *Burfi* is a popular milk based confection in which the base material is essentially *khoa.* Different cereals like wheat, maize, sorghum, ragi, are fortified with different dairy products like *kheer, lassi, laddu* etc. Among the different cereals ragi is the common name of finger millet in southern part of India. Finger millet is rich in protein, calcium, fiber and iron. Major portion of finger millet is carbohydrate 71.3 to 89.5 per cent.

Hence, considering the medicinal and nutritional value of finger millet. It is therefore decided to undertake the research work on preparation of *burfi* blended with finger millet powder with following

Objectives

1. To optimize the level of finger millet in *burfi*
2. To access the sensory properties of finger millet *burfi*
3. To study the chemical composition of finger millet *burfi*
4. To study the textural properties of finger millet *burfi*

Treatment combination

For the preparation *burfi* blended with Finger millet the following treatment combinations were taken for study:

T_0= 100 parts of buffalo milk *khoa* by weight + 0 Parts of Finger millet
T_1= 97 parts of buffalo milk *khoa* by weight + 3 Parts of Finger millet
T_2=94 parts of buffalo milk *khoa* by weight + 6 Parts of Finger millet
T_3=91 parts of buffalo milk *khoa* by weight + 9 Parts of Finger millet
T_4=88 parts of buffalo milk *khoa* by weight + 12 Parts of Finger millet

Fig. 1: Flow-diagram for preparation of *burfi* blended with finger millet

Receiving of buffalo milk
↓
Pre-heating (35-40^{O} C)
↓
Filtration
↓
Standardization of milk (6 per cent fat and 9 per cent SNF)
↓
Boiling of milk with continuous stirring-cum-scrapping
↓
Pasty consistency of *khoa*
Lowering of temperature upto 88-89^{O} C
↓
Addition of finger millet and sugar (30 per cent by weight at *khoa*)
as per treatment
↓
Continuous stirring with wooden *khunti* on low flame up to solid mass stage
↓
Spreading in tray and cooling
↓
Setting
↓
Cutting in to rectangular blocks
↓
Packaging in butter paper
↓
Storage at room temperature

RESULTS AND DISCUSSION

Sensory evaluation of finger millet *burfi*

Table 1.

Sr No	Treatment	Colour& Appearance	Flavour	Body & texture	Overall acceptability
1	**T_0**	8.88	8.76	8.93	8.80
2	**T_1**	8.63	8.50	8.69	8.42
3	**T_2**	8.43	8.18	8.40	8.20
4	**T_3**	8.13	7.78	8.00	7.87
5	**T_4**	7.68	7.50	7.30	7.47

From table 1, it was observed that the significant differences were observed in between the treatments T_0,T_1, T_2, T_3 and T_4 for colour and appearance, flavor, body and texture, overall acceptability in finger millet *burfi* This might be due to increased level of finger millet powder and their dull colour. Colour and appearance, flavor, body and texture, overall acceptability score decreased as the level of finger millet powder increased. This might be due to crushy structure of powder.

Chemical composition of finger millet *burfi*

Table 2.

Sr. No.	Treatment	Moisture(%)	Fat(%)	Protein(%)	Ash(%)	Carbohydrate(%)	TS(%)
1	**T_0**	16.84	21.07	15.00	2.43	44.66	83.16
2	**T_1**	16.62	20.48	14.79	2.49	45.65	83.39
3	**T_2**	16.35	19.90	14.58	2.54	46.64	83.66
4	**T_3**	16.09	19.31	14.37	2.58	47.64	83.91
5	**T_4**	15.87	18.72	14.16	2.63	48.62	84.13

From table 2, it was observed that all the treatments showed the significant difference for moisture contents in finger millet powder *burfi.* It was also observed that the fat content of *burfi* was significantly influenced by the addition of finger millet powder. In case of protein the differences were statistically significant among the various treatments. As finger millet powder increased in *burfi*, the moisture, fat, protein content in *burfi* was decreased. This might be due to the moisture, fat and protein content in finger millet powder.

From table 2 it was also observed that all treatments of *burfi* were significantly differed from each other in case of ash, carbohydrate and total solid content. As the finger millet powder level increases the ash, carbohydrate, total solid content level of the product was also increased. This might be due to the high content of mineral, total solid, sugar content of finger millet in *burfi*.

Textural properties of *burfi* blended with finger millet

Table 3.

Sr. No.	Treatment	**Hardness(kg)**	**Cohesiveness**	**Adhesiveness(kg)**	**Springiness (mm)**	**Gumminess**	**Chewiness(kg)**
1	**T_0**	1.757	1.345	-0.035	10.722	-0.061	-0.654
2	**T_1**	2.003	1.293	-0.017	11.026	-0.034	-0.375
3	**T_2**	2.660	1.442	-0.028	11.109	-0.074	-0.822
4	**T_3**	2.955	1.344	-0.024	10.521	-0.070	-0.736
5	**T_4**	3.297	1.362	-0.055	10.533	-0.181	-1.906

From table 3 it was observed that the hardness of Sample T4 was found highest compared to other samples, may be due to higher finger millet powder content of *burfi* and lower moisture content of sample. In terms of cohesiveness, T_0 sample of *burfi* showed superior results with highest cohesiveness among the *burfi* samples. Adhesiveness is related to the sensory stickiness and indicated by a negative peak following the first peak. Adhesiveness is lowest for sample T_1, T_2, and T_3 while sample T_0 showed highest adhesiveness. The results obtained pertaining to the springiness of correlation with the increase in concentration of finger millet powder blend, however in general the springiness of T_1 (11.026) samples were higher compared to that of T_0 (10.722) based on *burfi* sample. Among all sample, T_1 (-0.034) *burfi* sample containing highest gumminess, while lowest values were observed in case of sample T_4 (-0.181). Chewiness is one of the most important textural properties of *burfi*. The addition of fruit pulp significantly affected the chewiness of *burfi*. The overall textural profile of *burfi* showed that sample T_1 was superior to that of T_0, T2, T_3 and T_4 treatments.

CONCLUSIONS

This study leads to the conclusion that for sensory evaluation and chemical composition control (T_0) is better, but when compare various levels of finger millet 3 per cent is acceptable with like very much score (8.42) Hence it is concluded that the *burfi* blended with 3 per cent finger millet powder is more nutritious, acceptable and cheap for consumers.

REFERENCES

1. Anonymous, 1959. Laboratory manual. method of analysis of milk product.milk industry foundation, Washington

2. Bankar, S. N. 2011. Studies on preparation of pineapple *burfi*. M.Sc. (Agri.) *Thesis* Submitted to MKV, Parbhani.

3. Bhatele, D.And Balachandran, R. 1983. XVIII dairy industry conference, India (Madras) Cited by C. R. Reddy and G. S. Rajorhia 1992. *Indian J. Dairy Sci.* **45** (5): 220-225.

4. Carter, J. F. 1993. Potential of sesamum and sesamum oil in baked goods and other products in human nutrition. *Cereal Food World*; **38** (10) :753-759.

5. Chetana, R., Ravi, R., Yella Reddy, S. 2010. Effect of processing variables on quality of milk *burfi* prepared with and without sugar. *J. food.Sci. Technol.*, **47** (1): 114-118

6. Deshmukh, G. D. 2008. Preparation of *burfi* using honey as a sweetening agent. M.Sc. (Agri.) *Thesis*, Submitted to M.K.V., Parbhani (MS).

7. El-Khier, M. K. S., Ishag, K.E.A. and Yagoub, A. E.A. 2008. Chemical composition and oil characteristics of sesame seed cultivars grown in Sudan. *Research Journal of Agriculture and Biological Sciences*. **4**(6): 761-766.

8. Fariku, S., Ndonya, A. E. and Bitrus, P.Y. 2007. Biofuel characteristics of beni seed (*Sesanum indicum*) oil. *African Journal of Biotechnology*. **6** (21): 2442-2443.

9. Gandhi, K., Raheja, R. K. and Labana K. S. 1983. The role of sesame in nutrition. *Indian farming*. **33**(8): 12-15.

10. Golande, S.S. 2007. Studies on preparation of sweet orange *burfi* M.Sc. (Agri.) *Thesis*, Submitted to M.K.V., Parbhani (MS).

11. Hajare, V. H. 2011. Studies on preparation of almond *burf* M.Sc. (Agri.) *Thesis* Submitted to MKV, Parbhani.

12. Hemavathy, J., Ramanna, B. R. and Potty, U. H. 1974. Studies on commercial *burfi* preparation. Some preliminary observations. *Indian Food Packers.* **28** (3): 25.

13. Kamble, D. K. (2010). Standardization of techniques for production of fig *burfi*. Ph.D. thesis submitted to MPKV, Rahuri (M.S.) India.

14. Kamble, D. K., Patange, D. D., Choudhari, D. M. and Kale, V. A. 2015. Practices Followed by *Halwais* to Manufacture Fig *Burfi in* Maharashtra, India *Asian J. Dairy & Food Res.*, **34** (1): 1-7

15. Kathalkar, V.S. 1995. Studies on preparation of milk ber pulp *burfi*. M.Sc.(Agri.) *Thesis*, Submitted to M.K.V., Parbhani (MS).