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Effect of singhara (*Eleocharis dulcis*) flour on chemical composition of peda

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Abstract

The research work carried out to assess the effect of different combinations of singhara flour on chemical composition of buffalo milk peda during 2018-2019 in the section of Animal Husbandry and Dairy Science at College of Agriculture, Nagpur. The different levels of singhara flour were T1 (0%), T2 (05%), T3 (10%) and T4 (15%) with 30 per cent constant rate sugar was mixed in a khoa for preparation of peda. It is observed that addition of singhara flour in *khoa* had significantly decreases fat, protein and ash content in *peda* whereas, total solids content increases significantly as compare to control. Treatment T2 (05%) secured highest score 87.28, 18.25, 69.04, 12.64 and 3.31 for Total solids, fat, solids not fat, protein and ash content of singhara flour peda respectively.

Keywords: Khoa, singhara flour, peda, chemical composition

Introduction

Milk has been recognized as an almost complete food for man as it is a source of essential nutrients like carbohydrate, protein, fat, vitamins and minerals. India is largest milk producer in the world. India ranks 1st in milk production, accounting 18.5 per cent of world production. The milk production has been increased from 165.4 million tonnes in 2016-17 to 176.3 million tonnes in 2017-18 with per capita availability 355 gms per day (2016-17) to 375 gms per day (2017-18). India recorded a growth rate 6.4 per cent (2016-17) to 6.6 per cent (2017-18) whereas world production increased by 3.1 per cent (Basic Animal Husbandry and Fisheries Statistics 2018).

Peda is highly nutritious product as it contains almost all milk solids plus sugar and other additives. It is heat desiccated indigenous milk sweet prepared by heating a mixture of *Khoa* and sugar until the desired granular and firm texture and flavor develops. The quantity of *peda* produced in India exceeds any other indigenous milk based sweet and it has also special importance in various celebrations (wedding, inaugural functions, etc.) throughout the year (Ghule *et al.*, 2013) [5].

The singhara (*Eleocharis dulcis*) is one of the most popular foods for Asian people owing to its unique taste. This herbal plant belongs to the sedge family, which is often found in wet farm lands or pool districts. It has been suggested that this fruit possesses some health benefits such as antimicrobial effects on bacteria. It also has antioxidant, antiviral and anticancer properties, inhibition of inflammation and treatment for pharyngitis and laryngitis.

Singhara is effective on Jaundice and loose motion due to their detoxifying properties. It is rich in polyphenolic and flavonoid compound (Ge Zhan *et al.*, 2014) [4].

In Maharashtra, especially Eastern Vidarbha region of Chandrapur, Gadchiroli, Nagpur, Gondia and Bhandara district people are loving to eat singhara. It is seasonal nut available in winter therefore market demand of *singhara* is high. Also, *peda* is popular in this area and consume throughout the year. Hence considering the benefits of supplementation of low fat in the diet with respect to its nutritional and medicinal value, decided to blend singhara flour for preparation of *peda*.

Materials and Methods

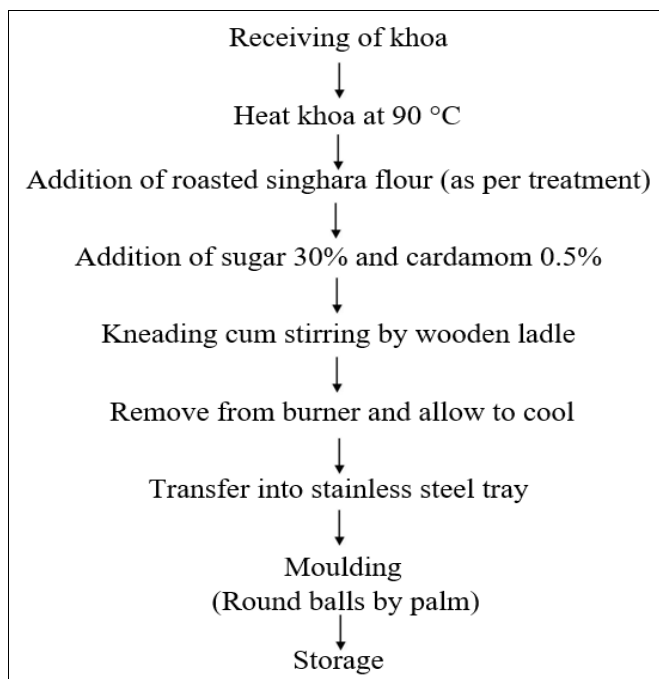
The present study was conducted on the studies on preparation of *peda* blended with singhara flour at section of Animal Husbandry and Dairy Science Section, College of Agriculture, Nagpur during the year 2018-2019. *Peda* prepared from buffalo milk was standardized at 6% fat. Singhara flour was added in *peda* at different levels, *i. e.* 0 (T₁), 5 (T₂), 10 (T₃) and 15 (T₄) part of *khoa* with five replications and sugar was added @ 30% of *khoa*. The fat, total solids,

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solids not fat, protein, and ash of singhara flour were determined. The process for preparation of peda blended with singhara flour is given in flow chart.



Flow chart for preparation of peda blended with singhara flour

The product was subjected to chemical analysis the fat (by Gerber's method, IS: 1224, Part II, 1977)^[8]. Total solids (by gravimetric, SP-18 part XI, 1981)^[7]. Protein (by micro-kjeldahl method, IS: 1981)^[7]. Ash (IS: 1981)^[7] and solids not fat was determined by subtracting the total solid content from 100.

Table 1: Chemical composition of peda

Treatments (BMK:SF)	Fat	Protein	Total solid	SNF	Ash
T1 (100:00)	18.99 ^a	14.88 ^a	87.18 ^d	68.19 ^d	3.66 ^a
T2 (95:05)	18.25 ^b	12.64 ^b	87.28 ^c	69.04 ^c	3.31 ^b
T3 (90:00)	17.49 ^c	12.10 ^c	87.43 ^b	69.94 ^b	2.64 ^c
T4 (85:00)	16.91 ^d	11.57 ^d	87.99 ^a	71.08 ^a	2.32 ^d
S.E.(m) ±	0.12	0.10	0.14	0.20	0.09
C. D.	0.37	0.31	0.43	0.60	0.27

(BMK - Buffalo Milk Khoa, SF - Singhara Flour, * $P < 0.05$)

Results and Discussion

Singhara flour peda were subjected for the proximate analysis viz., fat, total solids, solid not fat, protein and ash. The results obtained on account of these parameter are presented in Table 1.

Total solids

The highest total solids content (87.99%) was noticed in peda prepared with 15 parts of singhara flour i.e. T₄, whereas the lowest (87.18%) was recorded in peda prepared with 0 parts of singhara flour i.e. T₁. Total solid content of peda increased with an increase in the level of singhara flour. The finding is in agreement with Datarkar (2012)^[3] in singhara flour burfi.

Fat

The fat percentage was significantly highest in treatment T₁ (18.99%) prepared with 0 parts of singhara flour and lowest fat content was noticed in T₄ (16.91%) prepared with 15 parts of singhara flour. It indicated that fat content in peda

decreased with the increased singhara flour level. Similar results were reported by Ingale (2000)^[6] and Bankar (2011)^[1] in ash gourd kalakand and pineapple burfi respectively.

SNF

The highest SNF content in peda (71.08) was observed in treatment T₄ i.e. prepared with 15 parts of singhara flour and lowest (68.19%) in treatment T₁ i.e. prepared with 0 parts of singhara flour. Solids not fat content of peda was gradually increased due to the addition of different levels singhara flour.

Protein

The highest protein content in peda (14.88%) was observed in treatment T₁ i.e. prepared with 0 parts of singhara flour and lowest (11.57%) in treatment T₄ i.e. prepared with 15 parts of singhara flour. Addition of singhara flour decreased the protein content of peda. Similar result was reported by Datarkar (2012)^[3] in singhara flour burfi.

Ash

Ash content of peda was decreased due to the addition of different levels singhara flour. The highest ash content in peda (3.66%) was observed in treatment T₁ i.e. prepared with 0 parts of singhara flour and lowest (2.32%) in treatment T₄ i.e. prepared with 15 parts of singhara flour. This result in agreement with Pawar (2008)^[10] in sago powder peda.

Conclusion

The chemical composition of peda i.e. fat, protein and ash decreased with an addition of singhara flour while total solids and SNF increased due to more carbohydrate present in singhara flour.

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