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Preparation of herbal *Peda* with turmeric and black pepper powder

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Abstract

To study the effect of turmeric and black pepper incorporation on shelf life of *peda*, control sample (T_0) of *peda* was prepared with 30% sugar and 70% *khoa*. Herbal *peda* (T_2) was prepared with 30% sugar, 1% black pepper & 1% turmeric. Upon storage study at ($30^{\circ}\text{C}\pm 1$), free fatty acid content increased from 0.051 per cent oleic acid (0th day) to 0.094 per cent oleic acid (8th day) in T_0 and 0.049 per cent oleic acid (0th day) to 0.094 per cent oleic acid (12th day) in T_2 . The peroxide value increased from 0.094 milli moles/ kg of fat (0th day) to 1.168 milli moles/ kg of fat (8th day) in T_0 and 1.152 milli moles/ kg of fat (0th day) to 1.920 milli moles/ kg of fat (12th day) in T_2 . It has been found that the shelf life of control *peda* was 8 days and herbal *peda* was 12 days at 30°C . From the study it has been concluded that turmeric and black pepper powder are working as a natural preservative and increasing shelf life of the product.

Keywords: herbal, black pepper, turmeric

Introduction

The consumption of Traditional Indian Dairy Products (TIDP) is likely to grow at an annual growth rate of more than 20 per cent. *Peda* is highly nutritious product as it contains almost all milk solids plus sugar and other additives (Gavhane *et al.*, 2014) [2]. It is heat desiccated indigenous milk sweet prepared by heating a mixture of *Khoa* and sugar until the desired granular and firm texture and flavour 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) [3].

Increasing awareness among consumers to ensure good health coupled with changing lifestyle has led to the concept of functional foods. The development of functional food is thus unique to contribute opportunities for the improvement of the quality of food and consumer health and well-being. Nowadays, more and more people are adopting herbal way of life for their health benefits (Neall, 2004) [4]. Herbs and spices are an important part of the human diet. They have been used for thousands of years to enhance the flavor, color and aroma of food. In addition to boosting flavor, herbs and spices are also known for their preservative and medicinal value which forms one of the oldest sciences. Turmeric is mainly used as a spice in Indian foods and has medicinal value also. The major chronic disease including atherosclerosis, cancer, cardiovascular diseases, cataracts, and rheumatoid arthritis are relieved with anti-oxidants like Vitamin C, Vitamin E and Turmeric.

Black pepper is also an important traditional medicine and used to treat asthma, chronic indigestion, colon toxins, obesity, sinus, congestion, fever intermittent fever, cold extremities, colic, gastric ailments and diarrhea. It has been shown to have antimicrobial activity.

Materials and Method

Fresh Buffalo milk (6.0% fat and 9.0%) and High density polyethylene (HDPE) packaging material was purchased from local market of Raipur.

Preparation of *Khoa* and *Peda*

Khoa and *peda* were prepared as per the methodology given by Gavhane *et al.*, (2014) [2] with slight modification. For the preparation of turmeric and black pepper powder incorporated *peda*, optimized the levels of turmeric and black pepper powder incorporation *peda*. The levels of turmeric and black pepper are screened out based on sensory evaluation of the *peda*.

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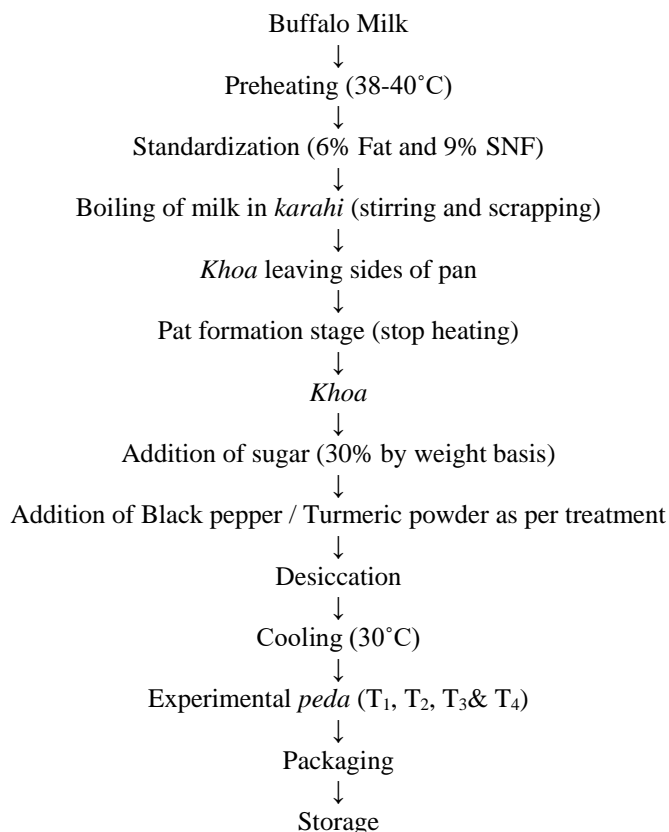
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Treatment Details and proportions

Treatment combinations were used for preparation of turmeric and black pepper powder incorporated *peda* are as given below:

Treatments/Ingredients	Percentage (For 100 g)				
	T ₀	T ₁	T ₂	T ₃	T ₄
<i>Khoa</i> (g)	70	68.5	68	67.5	67
Turmeric (g)	0	0.5	1	1.5	2
Sugar (g)	30	30	30	30	30
Black Pepper (g)	0	1	1	1	1
Total	100	100	100	100	100

Preparation of turmeric and black pepper incorporated *peda*



Result and Discussion

The effect of turmeric and black pepper powder incorporation on chemical quality with respect to free fatty acid value and peroxide value of *peda* were studied during storage at $30\pm 1^{\circ}\text{C}$ and the results are displayed in respective Tables and Figures.

Effect on free fatty acid shelf life of *peda*

Effect of turmeric and black pepper powder incorporation on free fatty acid value of *peda* during storage is given in Table 1 and Fig 1. On comparing means, it was observed that control T₂ had free fatty acid value of 0.072 per cent oleic acid and while, T₀ had free fatty acid of 0.083 per cent oleic acid. FFA value of the *peda* sample stored at $30\pm 1^{\circ}\text{C}$ were 0.051 (0 day), 0.073 (4 day) and 0.094 (8 day) as well as in herbal *peda* (T₂) net increase in FFA content of the *peda* sample stored at $30\pm 1^{\circ}\text{C}$ were 0.049 (0 day), 0.065 (4 day), 0.081 (8 day) and 0.094 (12 day). While comparing the results, it was observed that T₂ sample was slowly deteriorative than T₀. This may be due to preservation action of turmeric. It is evidence Ahire, (2007) [1] reported that incorporation of cardamom increased in FFA value of the *peda* samples respectively.

Table 1: Effect of turmeric and black pepper powder incorporation on free fatty acid value of the *peda* samples during storage at $30\pm 1^{\circ}\text{C}$

Treatment	0 day	4 day	8 day	12 day	Mean of Treatment (T)
T ₀	0.051	0.073	0.094	0.115*	0.083
T ₂	0.049	0.065	0.081	0.094	0.072
Mean of period (S)	0.050	0.069	0.088	0.105	

(* Spoilage)

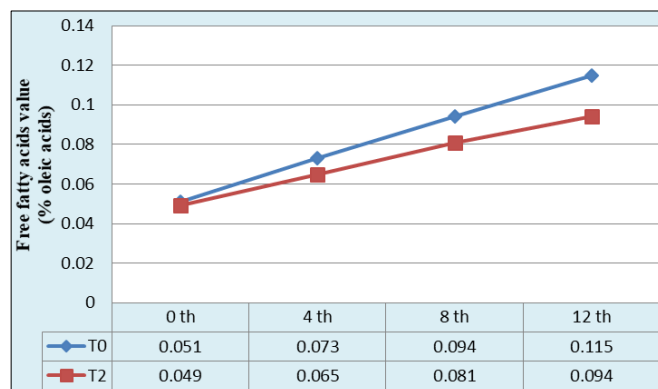


Fig 1: Effect of turmeric and black pepper powder incorporation on free fatty acid value of the *peda* samples during storage at $30\pm 1^{\circ}\text{C}$

Effect on peroxide value shelf life of *peda*

Effect of turmeric and black pepper powder incorporation on peroxide value value of *peda* during storage is displayed in Table 2 and Fig 2. On comparing means, it was observed that control T₂ had the lowest peroxide value of 1.544 per cent and differed significantly from experimental samples while, T₀ had the highest free fatty acid of 1.761 per cent.

Table 2: Effect of turmeric and black pepper powder incorporation on the peroxide value of of the *peda* samples during storage at $30\pm 1^{\circ}\text{C}$

Treatment	0 day	4 day	8 day	12 day	Mean of Treatment (T)
T ₀	1.168	1.568	1.925	2.384*	1.761
T ₂	1.152	1.424	1.680	1.920	1.544
Mean of period (S)	1.160	1.496	1.803	2.152	

(*Spoilage)

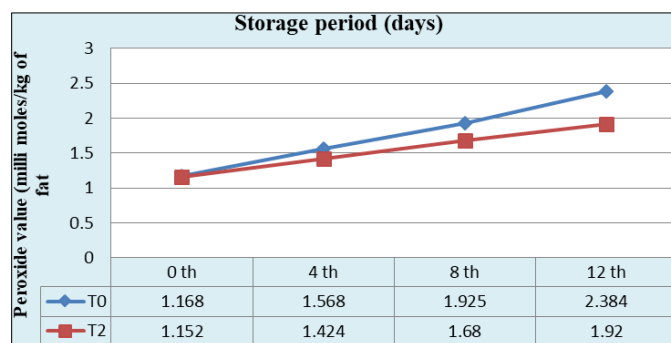


Fig 2: Effect of turmeric and black pepper powder incorporation on the peroxide value of the *peda* samples during storage at $30\pm 1^{\circ}\text{C}$

Summary and Conclusion

Upon storage study at $(30^{\circ}\text{C}\pm 1)$, free fatty acid content increased from 0.051 per cent oleic acid (0th day) to 0.094 per cent oleic acid (8th day) in T₀ and 0.049 per cent oleic acid (0th day) to 0.092 per cent oleic acid (12th day) in T₂. The peroxide value increased from 1.168 milli moles/ kg of fat (0th day) to 0.094 milli moles/ kg of fat (8th day) in T₀ and 1.152 milli moles/ kg of fat (0th day) to 1.920 milli moles/ kg of fat (12th

day) in T₂. From the study it has been concluded that turmeric and black pepper powder are working as a natural preservative and increasing shelf life of the product.

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