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Sapota-Papaya bar

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Abstract : Sapota-papaya fruit bar was prepared as per the FPO specification by blending the fruit pulp in different proportions. The standardized fruit bar (sapota- papaya 50:50) was kept at room temperature for about three months to study their keeping quality and the developed sapota-papaya bar was cut and individually packed in polyethylene bags (400 swg). A decreasing trend in pH, total sugar and ascorbic acid was observed. Whereas an increase in TSS, acidity and reducing sugar was noted throughout the storage period. Slight increase in microbial load was observed at the end of the storage period. The stored fruit bar had maintained the sensory evaluation score as highly acceptable upto 90 days.

Key words : Sapota-Papaya bar, fruit pulp, reducing sugar, sensory evaluation, microbial load.

Introduction

Sapota and papaya are the most important tropical fruits in India. Sapota is good source of sugar and minerals. Whereas papaya contains higher percentage of β-carotene than other fruits (Veeraraghavathatham *et al.*, 1996). However these ripe fruits exhibit limited shelf life. Hence, processing of these fruits into value added products with sufficient shelf life is important. Hence the present study was undertaken to preserve the fruits and also avail the nutrients fruit bar from the combination of sapota and papaya

Materials and Methods

Mature and uniform sized fruits (sapota-papaya) were selected, washed and surface dried. The outer skin was peeled and cut into pieces after removing the seeds. For fixing optimum percentage of papaya pulp incorporation a preliminary trial was conducted by mixing the sapota pulp with papaya pulp in different ratios *viz.*, 30:70, 50:50 and 70:30 per cent and the bar was prepared and evaluated using 10 judges. It was observed that 50:50 ratio was found to be highly acceptable. Sapota-papaya fruit bar was prepared by taking the fruit pulp in 50:50 proportion and the other ingredients such as sugar (400g), citric acid (2.5g), and l0g of corn flour were added. The mixture was heated with continuous stirring till it reaches 50° Brix. This slurry was spread on trays up to 1.0 cm thickness and dried in the cabinet drier at 60° C for 5 hrs. After 5 hrs, the second layer was spread over the first layer upto 2.0 cm thickness and continued drying for 2 hrs. The third layer was spread over the second layer up to 3.0 cm thickness and continuously dried for 15 hrs. The dried sheets were cooled and cut into small rectangular pieces. The cut pieces were packed individually in 400 swg thickness polyethylene bags. The packed materials were kept at room temperature for storage studies upto a period of 90 days. The sapota-papaya bar was analysed for the contents of moisture (A.O.A.C. 1975), TSS (° Brix), pH (pH meter), acidity and ascorbic

Table 1. Changes in chemical constituents of sapota - papaya bar during storage

Chemical constituents	Storage period (days)						
	0	15	30	45	60	75	90
Moisture (%)	16.40	16.37	16.31	16.26	16.21	16.17	16.05
Total soluble solids (° Brix)	80.00	80.00	79.50	79.30	79.00	78.50	78.00
pH	4.65	4.65	4.60	4.57	4.49	4.47	4.41
Titrable acidity (%)	0.405	0.408	0.412	0.415	0.419	0.423	0.429
Ascorbic acid (mg 100 g^{-1})	6.70	6.40	6.28	5.90	5.78	5.73	5.61
Total sugar (%)	60.93	60.48	60.02	59.81	59.37	59.00	58.85
Reducing sugar (%)	7.50	7.92	8.01	8.20	8.50	8.64	8.98
Non-reducing sugar (%)	53.44	52.56	52.01	51.61	50.87	50.36	49.87
β-carotene (μg 100 g^{-1})	605.17	602.12	600.55	598.56	597.42	596.12	595.87

	Moisture	Total soluble solids	pH	Titrable acidity	Ascorbic acid	Total sugar	Reducing sugar	Non-reducing sugar	β-carotene
SEd	0.0031	0.0043	0.0032	0.0003	0.0043	0.1260	0.0035	0.0126	1.9230
CD at 5%	0.0064	0.0089	0.0066	0.0007	0.0088	0.2581	0.0073	0.0259	3.9391

Table 2. Changes in organoleptic evaluation of sapota-papaya bar during storage

(90 days)

Storage period (days)	Sapota-Papaya bar				
	Colour and appearance	Flavour	Texture	Taste	Overall acceptability
0	8.00	7.00	8.00	9.00	9.00
15	8.00	7.00	8.00	9.00	9.00
30	7.98	6.97	7.90	8.90	8.95
45	7.94	6.92	7.86	8.87	8.92
60	7.92	6.88	7.82	8.84	8.88
75	7.88	6.85	7.79	8.8	8.82
90	7.84	6.82	7.76	8.68	8.79

Table.3. Changes in microbial quality of sapota-papaya bar during storage

Microbial load	Days			
	0	30	60	90
Bacteria x 10^{-6}/g	-	-	3	4
Fungi x 10^{-3}/g	-		2	6
Yeast x $l0^{-5}$/g	-	-	1	3

acid (A.O.A.C. 1975), total sugar and non-reducing sugar (Ranganna, 1995), Organoleptic evaluation (Amerine *et al.,* 1973), microbial load (bacteria, fungi, yeast) (Istavan kiss, 1984) at an interval of 0, 15, 30, 45, 60, 75 and 90 days of storage.

RESULTS AND DISCUSSION

The changes in the chemical constituents of stored sapota-papaya fruit bar is given in the table. 1. Moisture content of the samples decrease with storage period. The initial moisture content of sapota-papaya bar was 16.40 and decreased to 16.05 per cent during storage period. The TSS of the bar showed a slight change during the storage period. A slow decrease in the pH of sapota-papaya bar was observed through out the storage period. The initial pH was 4.65 and was changed to 4.41 at the end of 90 days. The total sugar and (β-carotene were decreased during storage. Similar observation was made by Vennila and Rose Prabin Kingsly (2001). Reducing sugars exhibited an increasing trend in the sapota-papaya bar during storage. The total and non-reducing sugars in papaya fruit bar decreased significantly during storage (Aruna *et al.,* 1999).

The organoleptic evaluation of fruit bar is given in Table. 2. Results showed that fruit bar packed in polyethylene bags was most acceptable upto 90 days. During storage there were decreases in organoleptic evaluation.

The microbial changes noted in the stored samples are presented in table.3. The microbial counts of bars packed in polyethylene bags were nil initially and increased slightly during storage. This may be due to the addition of the preservative (KMS), percentage of sugar content and the heat treatment given to the sapota-papaya fruit bar.

The fruit bar prepared from the combination of sapota-papaya was found to be acceptable by the consumers even after storing for three months. The chemical constituents of the fruit bar did not exhibit high variations during the study period. The slight increase in the microbial population neither spoiled the fruit bar nor decreased the consumer acceptability.

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