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EFFECT OF DIFFERENT OSMOTIC PRETREATMENTS ON SENSORY QUALITY OF OSMOTICALLY DEHYDRATED GUAVA SLICES

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ABSTRACT : Osmotically dehydrated guava slices were evaluated for their sensory qualities in the present investigation. The various osmotic pretreatments significantly affected the sensory score for colour and it was highest (23.79) in treatment T_8 (70° Brix syrup for 18 hours) followed by T_9 and T_3 while the minimum value (17.48) was obtained for control sample (T_{10}). The overall texture score for dehydrated products from Allahabad Safeda slices (21.17) was significantly superior to Pink Flesh (22.19). The maximum score for texture was recorded in treatment T_3 (50 oBrix syrup for 24 hours). With respect to score for flavour, effect of different osmotic treatments indicated that guava slices made using 70° Brix syrup for 18 hours (T_8) rated significantly superior (31.08) followed by T_4 and T_6. Significantly highest overall sensory score (78.16) was recorded in case of samples obtained with 70° Brix sugar syrup for 18 hours (T_8). Overall acceptability was rated good for osmotically dehydrated Allahabad Safeda and Pink Flesh slices produced through treatment T_8 (70° Brix sugar syrup for 18 hours). Osmotically dehydrated slices showed better colour, flavour, texture, and overall acceptability at initial stage than two and four months after storage under ambient conditions. How ever products were found acceptable and both varieties Allahabad Safeda and Pink Flesh were found suitable for osmotic dehydration.

Keywords : *Guava slice, sugar syrup, osmotic dehydration, sensory quality.*

Guava (*Psidium guajava* L.) belongs to the family Myrtaceae and has basic chromosome number n=11. Guava is a native of tropical America and seems to have been growing from Mexico to Peru and it is one of the commercial fruits of tropical as well as subtropical regions. Important guava growing countries in the world are Cuba, Brazil, Mexico, Southern China, India and Malaysia. It occupies an important place in the horticultural wealth of our nation and ranks fourth with respect to area and production after mango, banana and citrus. Guava is not only a wholesome fruit but it also provides lot of vitamins and minerals. It is rich source of vitamin C and pectin. It ranks third in vitamin C content (260 mg/100 g pulp) after barbadose cherry (1500 mg/100g) and aonla (700 mg/100g). According to Mehta and Tomar (9) guava contains 76.90 per cent water, 0.45 per cent acidity, 3.68 per cent reducing sugars and 5.76 per cent total soluble solids. These constituents may differ with the cultivar, stages of maturity and season. Therefore, because of rich nutritional status it is aptly known as “The poor Man’s Apple” and “Apple of Tropics”.

Guava fruit is relished when mature or ripe and freshly plucked from the tree. Fruits may be utilized to make products like jam, jelly, cheese, juice, canned segments, nectar, RTS, beverage etc. However, the most commercial use of guava is for jelly preparation. There is great demand of Red fleshed guava in world market for juice making. Guava contains ascorbic acid, 2 to 5 times more than fresh orange juice, and dehydrated guava juice powder is also a good source of ascorbic acid. Guava is a seasonal fruit with very short shelf life therefore it is required to make a self stable value added products from guava using simple drying technology. There are several techniques of preservation or processing available for different fruits. Dehydration of perishables like fruits and vegetables are best suited under Indian conditions (Dasgupta, 4). Babic *et al.* (3) studied a new technology which includes osmotic dehydration combined with conventional drying for the production of dried fruits. Teles *et al.* (12) reported that the osmotic dehydration represents a technological alternative to reduce post-harvest losses of fruits. Osmotic dehydration has gained attention recently due to its potential application in the food processing industry. It is a useful technique for the production of safe, stable, nutritious, tasty, economical and concentrated food obtained by placing the solid food, whole or in pieces in sugar or salt aqueous solution of high osmotic pressure (Fito *et al.,* 6). Apart from this, problems of marketing, handling and transportation becomes much simpler and fruits could be made available to the consumer throughout the year. The principle of osmosis as a means of water removal has been known for a long time. However,

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application of osmotic treatments to food can be considered among the new or improved techniques, as its main characteristics are that the materials are exposed to minimal thermal stress and that the processing in most cases is applied in combination with other preservation methods. The inclusion of osmotic process in conventional dehydration has two major objectives i) quality improvement and ii) energy savings. Osmosed products fall under the group of intermediate moisture foods. The present investigation was undertaken with the objectives of evaluating sensory quality parameters of osmotically dehydrated product.

MATERIALS AND METHODS

The materials used during the present investigation on osmotic dehydration of guava were Allahabad Safeda and Pink Flesh. The experiment was conducted at the Processing Laboratory of Division of Post-harvest Technology, Indian Institute of Horticultural Research, Hessarghatta, Bangalore. Matured and ripe guava fruits were procured from local fruit market, Bangaluru. Fresh fruits with uniform size and shape, free from transportation injuries, bruises, insect damages and diseases were selected for making the nutritious osmotically dehydrated slices.

Guava fruits of uniform size, firm texture and uniform ripened fruits were selected and weighed, lye peeled (5% NaOH boiling aquous solution for 2 min), washed thoroughly with tap water and peeled fruits weighed again. The washed fruits were cut into four equal parts, seeds as well as inner core was removed. Prepared slices were again weighed to record the yield recovery of fresh slices for osmotic dehydration. Sugar syrup of three different concentrations viz. 50° Brix, 60° Brix and 70° Brix was prepared. For one kg of prepared fruit slices, one kg of sugar and one kg of water was used to prepare 50° Brix concentration of sugar syrup, 1.2 kg of sugar and 0.8 kg of water was mixed to prepare 60° Brix concentration sugar syrup and also 1.4 kg of sugar and 0.6 kg of water was used to obtain 70° Brix concentration of sugar syrup as slice to sugar syrup ratio followed was 1:2. While boiling the sugar syrup solution, 0.3 per cent of citric acid was added. Maltodextrin (10%) was also added in sugar syrup. After adjusting the concentration of sugar syrup either by heating or addition of some more sugar, 0.1% each of potassium metabisulphite and sodium meta-bisulphite as a preservative was added to sugar syrup after dissolving in little drinking water after the syrup was cooled.

Prepared guava slices of 1 kg each were dipped in 50, 60 and 70° Brix sugar syrup solution in the ratio of 1:2 fruit to syrup and allowed to continue osmosis for 4, 18 and 24 hours at room temperature (20-30°C). After taking samples for analysis, known weight of osmosed slices of guava were spread thinly on stainless steel trays which were kept in a cabinet tray drier for dehydration. Guava slices were thoroughly air dried at 55-60°C temperature till the fruits reached the desired moisture content and product quality. The time required for drying the product to optimum moisture was recorded in different treatments. After dehydration, the dried guava samples were weighed, packed in polythene covers (300 gauge), vacuum sealed and subjected for storage studies at room temperature (20-30°C, 53-76% RH) or ambient conditions for a period of 4 months. The laboratory experiment was carried out by using a Factorial Completely Randomized Design (Factorial CRD) with 20 treatments. Each treatment as per following were replicated 2 times.

Factor I : Varieties :

a. Allahabad Safeda (V_1)

b. Pink Flesh (V_2)

Factor II : Pre-treatments (T)

T_1	Dipping in 50 °Brix sugar syrup for 4 hours
T_2	Dipping in 50 °Brix sugar syrup for 18 hours
T_3	Dipping in 50 °Brix sugar syrup for 24hours
T_4	Dipping in 60 °Brix sugar syrup for 4 hours
T_5	Dipping in 60 °Brix sugar syrup for 18 hours
T_6	Dipping in 60 °Brix sugar syrup for 24 hours
T_7	Dipping in 70 °Brix sugar syrup for 4 hours
T_8	Dipping in 70 °Brix sugar syrup for 18 hours
T_9	Dipping in 70 °Brix sugar syrup for 24 hours
T_{10}	Control (Dip in 0.1% KMS+0.1%NaMS for 10 min.)

Sensory evaluation of the product

Organoleptic quality evaluation of osmotically dehydrated guava slices was done initially after drying of the sample and subsequently after 2 and 4 months of storage. The various sensory features of the dehydrated samples was done by a panel of semi-skilled six judges by adopting a hedonic rating system having 100 points and score for quality parameters was 30 for colour and texture; and 40 for flavour. The experimental data from 10 treatments, 2 varieties and 2 replications pertaining to physico-

chemical and sensory quality of osmotically dehydrated guava slices were subjected to statistical analysis by Factorial Completely Randomized Design (FCRD) to study the effects of different treatments on different parameters. Analysis of variance (ANOVA) was conducted to determine whether significant difference existed between different sugar syrup treatments, and varieties on sensory qualities of osmotically dehydrated guava slices.

RESULTS AND DISCUSSION

Osmotically dehydrated slices were evaluated for their sensory qualities. Sensory scores obtained for colour, texture, flavour as well as overall acceptability is given in Table 1, 2 and 3 and Fig. 1. It would be appropriate to mention at the beginning that the obtained overall acceptability scores in the range of 80-100 is very good; 60-79 is good; 30-59 is average and 0-29 is poor.

Effect of pretreatments on colour at initial

There was no significant difference (Table 1) about the colour score among the varieties. The various osmotic pretreatments significantly affected the sensory score for colour and it was highest 23.79 in treatment T_8 while the minimum value (17.48) was obtained for control sample (T_{10}). Sensory score for osmotically dehydrated Allahabad Safeda indicates that the score for colour was highest 24.83 in the sample obtained by the treatment T_8 closely followed by T_5 and T_3. In osmotically dehydrated samples score varied from 20.17 to 24.83 which was in acceptable to highly accepta ble range (Table 1). Similarly, in case of Pink Flesh variety the score for colour was highest (25.25) in T_9 followed by T_1 and T_8.

Effect of pretreatments on texture at initial

The different treatments significantly affected the texture of dehydrated slices (Table 1). The overall texture score for dehydrated products from Pink Flesh slices (22.19) was superior than Allahabad Safeda (21.17). Among the pretreatments the maximum score for texture was observed in treatment T_3. In osmotically dehydrated samples score for texture ranged from 20.92 to 23.34. The minimum score (18.09) was observed in case of control slices (T_{10}). The effect of different pretreatments on the texture of Allahabad Safeda sample was maximum (23.33) in case of T_8.In case of Pink Flesh samples sensory score for texture (Table 1) ranged from 20.50 to 24.20 which were in acceptable to highly acceptable range. Lowest score was observed in control (20.00) samples.

Table 1 : Effect of different osmotic treatments on the sensory quality of osmotically dehydrated slices of guava varieties at different stages of storage (initial).

Treatment		Colour (30)			Texture (30)			Flavour (40)			Overall acceptability (100)		
		Variety		Treatment mean	Variety		Treatment mean			Treatment mean	Variety		Treatment mean
		Allahabad Safeda	Pink Flesh		Allahabad Safeda	Pink Flesh		Allahabad Safeda	Pink Flesh		Allahabad Safeda	Pink Flesh	
50^{O}B 4h	T_1	20.17	22.75	21.46	22.00	21.40	21.70	28.33	29.50	28.92	70.50	73.65	72.08
50^{O}B 18h	T_2	22.33	20.75	21.54	21.33	22.00	21.67	25.00	30.23	27.62	68.67	72.98	70.83
50^{O}B 24h	T_3	23.33	22.00	22.67	23.17	23.50	23.34	29.17	25.62	27.40	75.67	71.12	73.40
60^{O}B 4h	T_4	21.44	21.00	21.22	20.83	22.50	21.67	26.23	31.87	29.05	68.50	75.37	71.94
60^{O}B 18h	T_5	22.54	20.25	21.40	19.33	22.50	20.92	27.41	28.42	27.92	69.28	71.17	70.23
60^{O}B 24h	T_6	22.50	21.87	22.19	22.17	22.00	22.09	27.40	30.45	28.93	72.07	74.32	73.20
70^{O}B 4h	T_7	22.33	21.25	21.79	22.67	20.50	21.59	25.67	30.75	28.21	70.67	72.50	71.59
70^{O}B 18h	T_8	24.83	22.75	23.79	23.33	23.25	23.29	30.20	31.95	31.08	78.37	77.95	78.16
70^{O}B 24h	T_9	21.50	25.25	23.38	20.67	24.20	22.44	26.00	26.45	26.23	68.17	75.90	72.04
Control	T_{10}	16.33	18.62	17.48	16.17	20.00	18.09	21.20	22.41	21.81	53.70	61.03	57.37
Variety mean		**21.73**	**21.65**		**21.17**	**22.19**		**26.66**	**28.77**		**69.56**	**72.60**	
CD (P=0.05)			**Colour**		**Texture**			**Flavour**			**Overall acceptability**		
Variety (V)			NS		NS			NS			NS		
Treatment (T)			1.15		1.07			1.12			1.71		
V×T			NS		NS			NS			NS		

NS = Non-significant

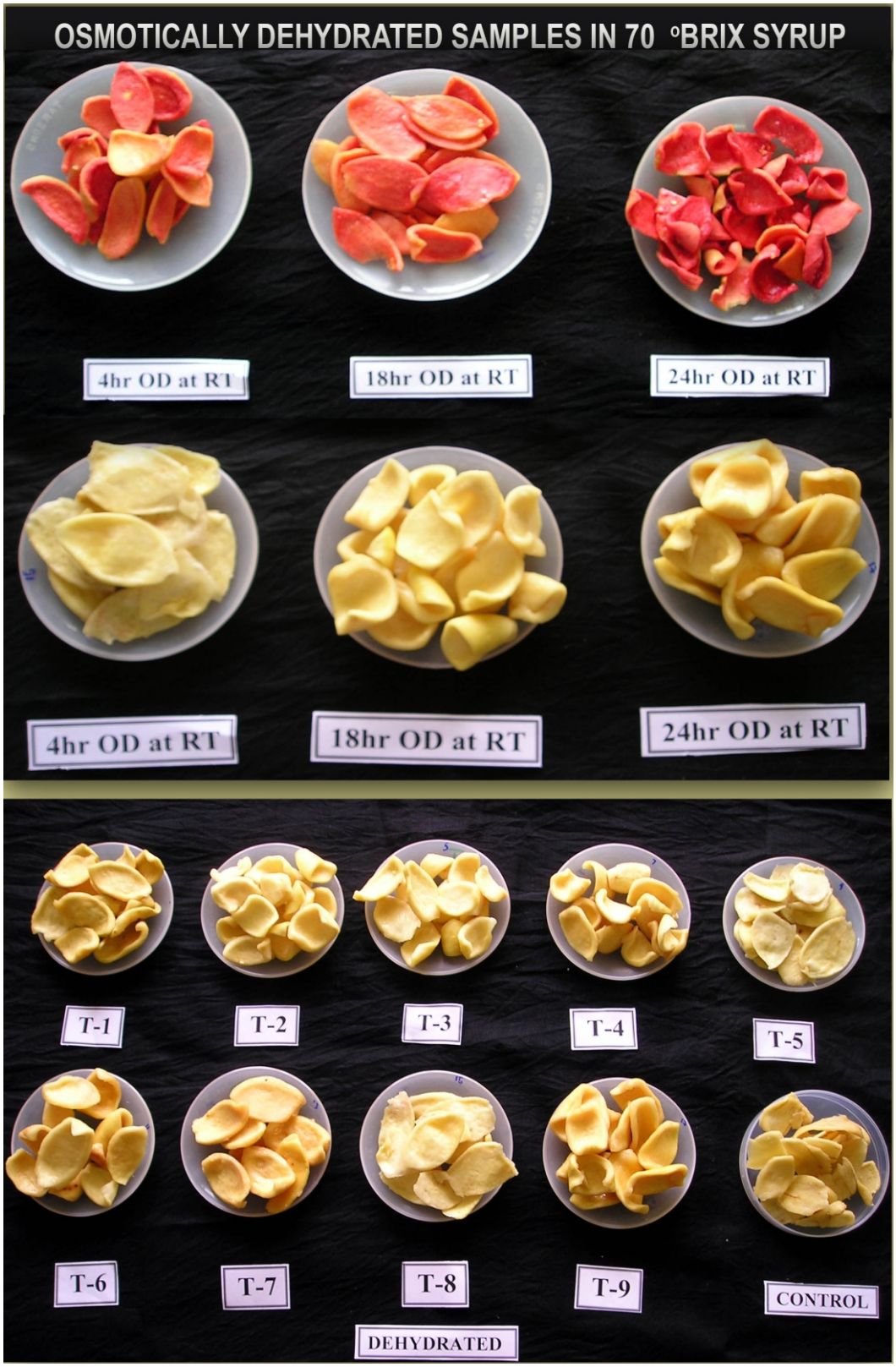

Figure 1 : Effect of different osmotic pretreatments on sensory quality of osmotically dehydrated guava slices.

Table 2 : Effect of different osmotic treatments on the sensory quality of osmotically dehydrated slices of guava varieties at different stages of storage (2MAS).

Treatment		Colour (30)			Texture (30)			Flavour (40)			Overall acceptability (100)		
		Variety		Treatment mean	Variety		Treatment mean			Treatment mean	Variety		Treatment mean
		Allahabad Safeda	Pink Flesh		Allahabad Safeda	Pink Flesh		Allahabad Safeda	Pink Flesh		Allahabad Safeda	Pink Flesh	
50^{O}B 4h	T_1	18.57	21.15	19.86	21.10	20.50	20.80	26.93	27.52	27.23	66.60	69.17	67.89
50^{O}B 18h	T_2	20.73	19.15	19.94	20.43	21.10	20.77	23.60	28.83	26.22	64.76	69.08	66.92
t50^{O}B 24h	T_3	21.73	20.40	21.07	22.27	22.60	22.44	27.77	24.22	26.00	71.77	67.22	69.50
60^{O}B 4h	T_4	19.84	19.40	19.62	19.93	21.60	20.77	24.83	30.47	27.65	64.60	71.47	68.04
60^{O}B 18h	T_5	20.94	18.65	19.80	18.43	21.60	20.02	26.01	27.02	26.52	65.38	67.27	66.33
60^{O}B 24h	T_6	20.90	20.27	20.59	21.27	21.10	21.19	26.00	29.05	27.53	68.17	70.42	69.30
70^{O}B 4h	T_7	20.73	19.65	20.19	21.77	19.60	20.69	24.27	29.35	26.81	66.77	68.60	67.69
70^{O}B 18h	T_8	23.23	21.15	22.19	22.43	22.35	22.39	28.80	30.55	29.68	74.46	74.05	74.26
70^{O}B 24h	T_9	19.90	23.65	21.78	19.77	23.30	21.54	24.60	25.05	24.83	64.27	72.00	68.14
Control	T_{10}	14.73	17.02	15.88	13.27	19.10	16.19	19.80	21.01	20.41	47.80	57.13	52.47
Variety mean		**20.13**	**20.05**		**20.07**	**21.29**		**25.26**	**27.31**		**65.46**	**68.64**	

CD (P=0.05)	Colour	Texture	Flavour	Overall acceptability
Variety (V)	NS	NS	NS	NS
Treatment (T)	1.24	1.05	1.02	1.86
V×T	NS	NS	NS	NS

NS = Non-significant; MAS = Months after storage

Effect of pretreatments on flavour at initial

Data pertaining to sensory score for flavour (Table 1) indicates that the overall score for osmotically dehydrated Pink Flesh slices was same. Statistically significant variations due to different osmotic pretreatments were observed with respect to score for flavour. Score for flavour ranged from 26.23 to 31.08 among the osmotically treated samples which were in acceptable range. The minimum score was observed in control (21.81). In case of osmotically dehydrated Allahabad Safeda (Table 1) sensory score for flavour ranged from 25.00 (T_2) to 30.20 (T_8) which was in highly acceptable range. In contrast the lowest score 21.20 for flavour was observed in control slices (T_{10}). Similarly the sensory score for flavour (Table 3) in Pink Flesh osmotically dehydrated slices ranged from 25.62 (T_3) to 31.95 (T_8) which were in acceptable to highly acceptable ranges. Score was lowest (22.41) in control (T_{10}).

Effect of pretreatments on overall acceptability at initial

Different osmotic pretreatments (Table 1) significantly affected the overall acceptability. Osmotically dehydrated guava slices products made were rated non-significantly. Allahabad Safeda was superior over Pink Flesh and values were 72.60 and 69.56, respectively. Highest total sensory score (78.16) was observed in case of samples obtained with 70° Brix sugar syrup for 18 hours (T_8) which was significantly superior from the other treatments and closely followed by treatment T_6. In contrast, the lowest total score (57.37) was observed in control samples (T_{10}).

Overall acceptability was rated good for osmotically dehydrated Pink Flesh samples produced through treatment T_8, T_9 and T_4. Further, the total score values for osmotically treated slices ranged from 71.12 to 77.95 which was in the acceptable to highly acceptable range. In contrast, lower value (61.03) was observed in case of control samples (T_{10}). Similarly, in case of Allahabad Safeda variety total score values ranged from 68.17(T_9) to 78.37(T_8) in osmotically dehydrated sample while it was 53.70 in control (T_{10}).

Effect of pretreatments on colour after two months of storage

Significantly highest score for colour (22.19) was observed in slices treated with 70° Brix for 18 hours (T_8) followed by T_9 and T_3.Whereas, lowest score (15.88) was observed in control sample (T_{10}). In osmotically dehydrated Allahabad Safeda, the highest

score (23.23) was observed in T_8 followed by T_3 and T_6 and values ranged from 18.57 to 23.23 while, lowest score (14.73) was observed in control sample (T_{10}). In osmotically dehydrated Pink Flesh slices, the score for colour was maximum (23.65) in T_9 followed by T_1 and T_8(21.15 each) and values ranged from 18.65 to 23.65 while control sample had 17.02 score (Table 2).

Effect of pretreatments on texture at two months after storage

Among the osmotic pretreatments, significantly highest score (22.44) for texture was observed in treatment T_3 closely followed by T_8 at two months of storage. In osmotically treated samples scores for texture ranged from 20.02 to 22.44. In contrast, the lowest score (16.19) was observed in untreated control slices. In case of Allahabad Safeda maximum value was in T_8 (22.43) followed by T_3 and T_7 and it ranged from 18.43 to 22.43. On the other hand, control sample rated lowest for texture score of 13.27. In case of Pink Flesh slices (Table 2) sensory score for texture ranged from 19.60 (T_7) to 23.30 (T_{10}) which was in acceptable to highly acceptable range, whereas lowest score (19.10) was observed in untreated slices (T_{10})

Effect of pretreatments on flavour after two months of storage

Effect of different osmotic treatments (Table 2) indicates that significantly highest score (29.68) for flavour was observed in treatment T_8 and ranged from 24.83 to 29.68. Minimum score (20.41) for flavour was in control sample. Osmotically dehydrated Allahabad Safeda slices sensory score for flavour ranged from 23.60 to 28.80 which were rated acceptable to highly acceptable and the lowest score for flavour (19.80) was observed in control (T_{10}). Similarly the sensory score (Table 2) for flavour in osmotically dehydrated slices of Pink Flesh ranged from 24.22 (T_3) to 30.55 (T_8) and it was lowest (21.01) in control samples (T_{10}).

Effect of pretreatments on overall acceptability after two months of storage

Data given in Table 2 indicates that different osmotic pretreatments non significantly affected the overall acceptability of osmotically dehydrated guava products made. Pink Flesh slices were rated non-significantly superior over Allahabad Safeda and values were 65.46 and 68.64, respectively. Highest total sensory score (74.26) was observed in treatment T_8 (70° Brix sugar syrup for 18 hours) which was significantly superior from rest of the treatments and followed by T_6 and T_3. While lowest total score (52.47) was noticed in control samples. In case of osmotically treated Allahabad Safeda the highest score (74.46) was obtained with treatment T_8 followed by T_3. The total score values of osmotically treated slices ranged from 64.27 to 74.46 which was rated average to good. On the other hand, lowest overall score (47.80) was found in control. Similarly, in case of Pink Flesh slices, values ranged from 68.60 (T_7) to 74.05(T_8) and lowest (57.13) score was observed in T_{10} (control).

Effect of pretreatments on colour after four months of storage

Significantly highest sensory score (19.59) was observed in treatment T_8 followed by T_3 and T_9 while it was lowest (14.28) in T_{10} (control). In case of Allahabad Safeda the highest colour score (20.63) was observed in treatment T_8 followed by T_3 and values ranged from 15.97 to 20.63. Similarly, in case of Pink Flesh values ranged from 16.05 to 21.05 in osmotically dehydrated slices (Table 3). This indicates that all the samples were rated good for colour at the initial stage of sensory evaluation. Osmotically dehydrated slices showed better colour initially than the two and four months storage. Similar results were observed by Tiwari (14).

Effect of pretreatments on texture at four months of storage

The effect of different osmotic treatments (Table 3) resulted in significant variation with respect to score for texture of dehydrated slices after four months of storage. Significantly highest texture score (19.39) was observed in sample of Pink Flesh than the Allahabad Safeda slices (18.17). Among the treatments, significantly higher score (20.54) for texture was observed in T_3 at par with T_8 after four months of storage. In osmotically treated sample texture score ranged from 18.12 to 20.54, while significantly lowest score (14.29) was in untreated slices (T_{10}). Texture score of fresh product was higher when compared to 2 and 4 months after storage. Variation in texture score of osmotically dehydrated banana slices has been reported by Thippanna (13).

Effect of pretreatments on flavour at four month of storage

Data given in Table 3 indicates that the samples obtained from treatment T_8 were found significantly superior with respect to score for flavour (27.28) and closely followed by T_4. Score for flavour ranged from 22.33 to 27.28 in osmotically treated samples, while significantly lowest score (18.01) was observed in control (T_{10}) sample. No significant differences were

Table 3: Effect of different osmotic treatments on the sensory quality osmotically dehydrated slices of guava varieties at different stages of storage (4 MAS).

Treatment		Colour (30)			Texture (30)			Flavour (40)			Overall acceptability (100)		
		Variety		Treat ment mean	Variety		Treat ment mean	Variety		Treat ment mean	Variety		Treat ment mean
		Allaha bad Safeda	Pink Flesh		Allaha bad Safeda	Pink Flesh		Allaha bad Safeda	Pink Flesh		Allaha bad Safeda	Pink Flesh	
50^{O}B 4h	T_1	15.97	18.55	17.26	19.20	18.60	18.90	24.53	25.12	24.83	59.70	62.27	60.99
50^{O}B 18h	T_2	18.13	16.55	17.34	18.53	19.20	18.87	21.20	26.43	23.82	57.86	62.18	60.02
50^{O}B 24h	T_3	19.13	17.80	18.47	20.37	20.70	20.54	25.37	21.82	23.60	64.87	60.32	62.60
60^{O}B 4h	T_4	17.24	16.80	17.02	18.03	19.70	18.87	22.43	28.67	25.55	57.70	65.17	61.44
60^{O}B 18h	T_5	18.34	16.05	17.20	16.53	19.70	18.12	23.61	24.62	24.12	58.48	60.37	59.43
60^{O}B 24h	T_6	18.30	17.67	17.99	19.37	19.20	19.29	23.60	26.65	25.13	61.27	63.52	62.40
70^{O}B 4h	T_7	18.13	17.05	17.59	19.87	17.70	18.79	21.87	26.95	24.41	59.87	61.70	60.79
70^{O}B 18h	T_8	20.63	18.55	19.59	20.53	20.45	20.49	26.40	28.15	27.28	67.56	67.15	67.36
70^{O}B 24h	T_9	17.30	21.05	19.18	17.87	21.40	19.64	22.20	22.45	22.33	57.37	64.90	61.14
Control	T_{10}	14.13	14.42	14.28	11.37	17.20	14.29	17.40	18.61	18.01	42.90	50.23	46.57
Variety mean		**17.73**	**17.45**		**18.17**	**19.39**		**22.86**	**24.95**		**58.76**	**61.78**	

CD (P=0.05)	Colour	Texture	Flavour	Overall acceptability
Variety (V)	NS	0.46	NS	0.58
Treatment (T)	0.95	1.03	0.93	1.31
V×T	NS	NS	NS	NS

NS = Non-significant; MAS = Months after storage.

found due to interaction between varieties and treatments. For Allahabad Safeda slices flavour scores ranged from 21.20 to 26.40 while it was in range of 21.82 to 28.15 in Pink Flesh. Osmotically dehydrated slices showed better flavour at initial than two and four months of storage under ambient conditions. Improvement in flavour of osmotically dehydrated slices from the above treatments was mainly due to better sugar acid ratio. It has been reported that variables affecting osmotic dehydration kinetics, as well as final ratio of water loss and sugar gain has great influence on product characteristics (Giraldo *et al.,* 7) and improved product from fruit can be obtained through osmotic dehydration (Tiwari 14).

Effect of pretreatments on overall acceptability after four months of storage

Products prepared by using Pink Flesh slices (61.78) were significantly superior over Allahabad Safeda slices (58.76). Among the treatments, highest overall sensory score (67.36) was observed in T_8 and values ranged from 59.43 to 67.36 in osmotically treated slices. This indicates that samples were rated average to good even after four months of storage at room temperature. In contrast lowest score (46.57) was observed in control (T_{10}). The interaction effects between varieties and treatments were found non-significant with respect to overall sensory score as given in Table 3. In Allahabad Safeda samples overall sensory score values ranged between 57.37 to 67.56, while in osmotically dehydrated Pink Flesh slices it was in the range of 60.32 to 67.15. These results are in conformity with the findings on organoleptic properties of osmotically dehydrated mango slices (Varany *et al.,*15). Osmotic dehydration of fruits reduces heat damage to colour, flavour and loss of fresh fruit flavour, and also prevents enzymatic browning of the fruit. Influence of osmotic agents on product quality have been reported in fruits such as papaya (Ahemed and Choudhary, 1; and Nimmanpipug and Thendtha, 10), mango (Madamba and Lopez, 8; Amitabh *et al.,* 2; Varany *et al.,*15), banana (Thippanna, 13), apricot (Babic *et al.,* 3) and pine apple (Pokharkar and Prasad, 11; and Fasogbon *et al.,* 5).

Hence, it is concluded that the osmotic dehydration process effectively improved the quality and yield of dehydrated guava slices in both varieties Allahabad Safeda and Pink Flesh. Best quality product was obtained by pretreatment of slices in 70° Brix

syrup for 18 hours using both the varieties while higher yield was obtained by osmosis in 70° Brix syrup for 24 hours. Variation in syrup concentration and duration of osmosis affected the weight loss, solid gain in osmosed samples as well as contents of acidity, ascorbic acid and sugars in osmotically dehydrated slices.

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