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Effect of Storage Period on Biochemical Composition of Guava Nectar

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Abstract

Guava (*Psidium guajava*) is a popular commercial fruit crop, an indigenous to tropical America and belongs to family "Myrtaceae". It has been cultivated in India since early 17th Century. The present investigation was carried out during the year 2007-08. The experimental material consisted of three varieties of guava (i.e.Allahabad Safeda, Lucknow-49 and Chittidar) with four recipe treatments for nectar. There were four treatment combinations and were replicated three times under completely randomized design with factorial arrangement. At the end of 90 days of storage period the nectar prepared from L-49 has maximum content of TSS (17.01%), ascorbic acid (4.98 mg/100 g), reducing sugar (7.12%), non-reducing sugar (9.42%) and has lowest pH (0.49). The organoleptic score was found to be maximum in nectar prepared from variety Allahabad Safeda (7.48) followed by L-49 (6.63).

Key words : Guava nectar, Storage period, Biochemical composition.

Guava (the apple of tropics) is one of the most important commercial fruit crops of India. It excels most of the fruit crops in productivity, hardiness, adaptability and vitamin C content (1). Being hardy in nature, it gives assured crop even with little care. The cost of production of guava is also low because it needs the minimum of fertilizer, irrigation and plant protection. Moreover, the guava fruits are excellent source of vitamin C, ranging from 70—350 mg/100 g, which is about two to five times more than orange and ten times to that of tomato. Apart from vitamin C, it is also a rich source of minerals like calcium, phosphorus and iron. The fruits had substantial quantity of vitamin A, pantothenic acid, riboflavin, thiamin and niacin. Low cost of production combined with high nutritive value makes it an ideal dessert of common man. However, it is highly perishable and can not be transported to distant places for marketing. Besides using as fresh, its fruits are being processed into various products like jam, jelly, cheese, clarified juice, powder, toffee, butter paste etc for domestic market as well as for export. It is rich source of pectin ranging from 0.52—2.0%. There is a drastic reduction in pectin content when its fruits are over-ripened (2). The use of pectin enzymes in association with fining agents in fruit processing is essential to get better juice yields, improve filtration rate and produce clear juice of high quality for the concentration process. These qualities make it an ideal fruit for nutritional security (3).

Methods

The investigation was carried out at Department of Horticulture, College of Agriculture, JNKVV, Indore during 2007-08. Fifteen year old plants of three guava varieties were used as experimental material. Healthy and vigorous plants, free from infestation of insect-pest and diseases were selected. The experimental material consisted of three varieties of guava (i.e. Allahabad Safeda, Lucknow-49 and Chittidar) with four recipe treatments for nectar. There were four treatment combinations and were replicated three times under completely randomized design with factorial arrangement. The biochemical composition of guava nectar was subjected to analysis for determination of total soluble solids (%), acidity (%), ascorbic acid (mg/100 g), reducing sugar (%), total sugar (%) and non-reducing sugar (%) and organoleptic score of fruit nectar were also analyzed. The result obtained are presented in Table 1 to 7. Details are given in the flow chart (Fig. 1).

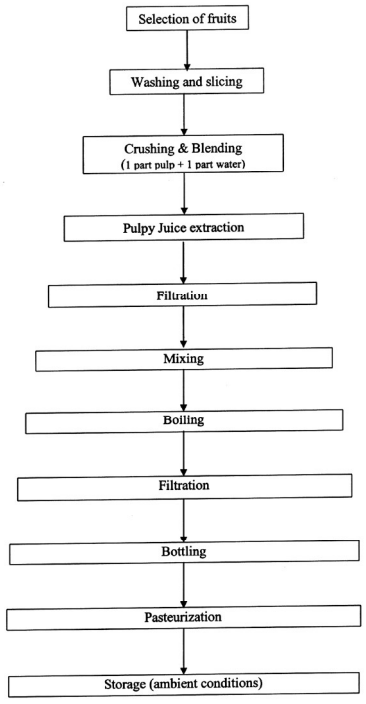

Figure 1. Flow chart–Preparation of guava Nectar.

Results and Discussion

The important bio-chemical analysis of guava nectar was done initially just after preparation and upto 90 days at 15 days interval. It was apparent the data show that total soluble solids (TSS) value of stored guava nectar, showed an increasing trend with increasing period of storage (Table 1). At the end of 90 days of storage period, the variety L-49 contains highest TSS (17.01%) followed by Allahabad Safeda (16.33%) and Chittidar (15.98). The increased TSS in nectar during storage was probably due to conversion of left over polysaccharides into soluble sugars. In conformity of this, similar results were observed in date juice RTS (4) and guava beverages (5—7). Further, the acidity in guava nectar showed an increasing trend with increasing storage period and similar trend was recorded upto 90 days (Table 2) and the guava nectar of variety Chittidar contained the maximum acidity (0.58%) which was higher than Allahabad Safeda (0.51%) and the lowest acid content was recorded in nectar of Lucknow-49 (0.49%). The increase in acidity in nectar during 90 days of storage may be due to formation of organic acids by ascorbic acid degradation and progressive decrease in pectin content. Similar findings were also reported in the beverages of papaya (8), mango (9) and guava (5—7). The ascorbic acid content in guava nectar showed a decreasing trend with increasing period of storage (0—90 days) (Table 3). It was found highly significant between varieties from 0—90 days of storage. At the end of storage period, guava nectar of variety Lucknow-49 contained maximum ascorbic acid (4.98 mg/100 g), which was significantly higher than Allahabad Safeda (4.53 mg/100 g) and Chittidar (3.32

Table 1. Effect of different varieties and treatments on TSS (%) of stored guava nectar. T_1 : 20% pulp, 13% TSS, 0.3% acidity, T_2 : 20% pulp, 15% TSS, 0.3% acidity, T_3 : 20% pulp, 17% TSS, 0.3% acidity, T_4 : 20% pulp, 19% TSS, 0.3% acidity. AS : Allahabad Safeda, L-49 : Lucknow-49, CR : Chittidar.

Varieties	Storage period (days)															
Treatments	0 (at the time of preparation)				15				30				45			
	AS	L-49	CR	Mean	AS	L-49	CR	Mean	AS	L-49	CR	Mean	AS	L-49	CR	Mean
T_1	13.07	13.41	12.10	12.86	13.10	13.15	12.59	12.95	13.15	13.96	13.02	13.38	13.22	13.74	13.22	13.40
T_2	15.00	15.00	13.63	14.54	15.08	15.41	13.79	14.76	15.15	15.59	14.06	14.93	15.21	16.15	14.61	15.32
T_3	17.02	17.03	16.34	16.80	17.04	17.53	16.14	16.90	17.07	17.28	16.12	16.82	17.08	17.40	16.87	17.12
T_4	19.03	19.05	18.37	18.82	19.17	19.23	18.64	19.01	19.28	19.34	18.75	19.12	19.33	19.39	18.34	19.02
Mean	16.03	16.13	15.11	15.76	16.10	16.33	15.29	15.91	16.16	16.54	15.49	16.07	16.21	16.67	15.76	16.21
SE ±	0.306	0.505	0.613		0.319	0.378	0.309		0.205	0.267	0.266		0.461	0.321	0.240	
CD (5%)	0.997	1.647	1.999		1.039	1.232	1.007		0.669	0.871	0.868		1.504	1.048	0.783	

Table 1. Continued.

Varieties Treatments	Storage period (days) 60 AS	60 L-49	60 CR	60 Mean	75 AS	75 L-49	75 CR	75 Mean	90 AS	90 L-49	90 CR	90 Mean
T_1	13.27	14.72	13.15	13.29	13.29	14.77	13.20	13.75	13.31	14.61	13.39	13.77
T_2	15.30	15.82	14.64	15.32	15.36	16.24	14.34	15.32	15.39	16.19	14.06	15.22
T_3	17.09	17.25	16.80	17.12	17.12	17.32	17.18	17.21	17.14	17.76	17.37	17.42
T_4	19.40	19.02	18.71	19.02	19.43	19.46	18.82	19.24	19.45	19.47	19.12	19.35
Mean	16.21	16.19	15.68	16.19	16.30	16.95	15.88	16.38	16.33	17.01	15.98	16.44
SE ±	0.310	0.303	0.202		0.542	0.284	0.254		0.483	0.409	0.241	
CD 5%	1.011	0.987	0.660		1.768	0.925	0.829		1.575	1.333	0.787	

mg/100 g). The decrease in ascorbic acid in nectar during the storage might be due to oxidation reduction process or irreversible conversion of L-ascorbic acid into dehydro ascorbic acid in the presence of enzyme ascorbic acid oxidase (ascorbinase) caused by trapped or residual oxygen in the glass bottles.

Table 2. Effect of different varieties and treatments on acidity (%) of stored guava nectar. T_1 : 20% pulp, 13% TSS, 0.3% acidity, T_2 : 20% pulp, 15% TSS, 0.3% acidity, T_3 : 20% pulp, 17% TSS, 0.3% acidity, T_4 : 20% pulp, 19% TSS, 0.3% acidity, AS : Allahabad Safeda, L-49 : Lucknow-49, CR : Chittidar.

Varieties Treatments	Storage period (days) 0 (at the time of preparation) AS	0 L-49	0 CR	0 Mean	15 AS	15 L-49	15 CR	15 Mean	30 AS	30 L-49	30 CR	30 Mean	45 AS	45 L-49	45 CR	45 Mean
T_1	0.31	0.31	0.31	0.31	0.33	0.32	0.36	0.34	0.34	0.34	0.39	0.36	0.35	0.34	0.41	0.37
T_2	0.31	0.31	0.31	0.31	0.33	0.32	0.38	0.34	0.34	0.34	0.42	0.37	0.36	0.34	0.43	0.38
T_3	0.31	0.31	0.31	0.31	0.33	0.33	0.41	0.36	0.35	0.34	0.47	0.39	0.39	0.35	0.48	0.41
T_4	0.31	0.31	0.31	0.31	0.33	0.33	0.50	0.38	0.37	0.34	0.53	0.41	0.42	0.37	0.51	0.43
Mean	0.31	0.31	0.31	0.31	0.327	0.325	0.412	0.35	0.35	0.34	0.45	0.38	0.38	0.35	0.46	0.40
SE ±	0.10	0.10	0.10		0.08	0.01	0.02		0.08	0.01	0.02		0.01	0.01	0.02	
CD (5%)	0.32	0.32	0.32		0.26	0.05	0.07		0.25	0.05	0.08		0.02	0.05	0.05	

Table 2. Continued.

Varieties Treatments	Storage period (days) 60 AS	60 L-49	60 CR	60 Mean	75 AS	75 L-49	75 CR	75 Mean	90 AS	90 L-49	90 CR	90 Mean
T_1	0.41	0.38	0.44	0.41	0.43	0.42	0.48	0.44	0.45	0.44	0.51	0.47
T_2	0.43	0.41	0.45	0.43	0.45	0.44	0.50	0.46	0.49	0.48	0.56	0.51
T_3	0.43	0.42	0.47	0.44	0.46	0.46	0.55	0.49	0.52	0.50	0.60	0.54
T_4	0.49	0.46	0.50	0.48	0.51	0.50	0.61	0.54	0.57	0.52	0.64	0.58
Mean	0.44	0.42	0.47	0.44	0.46	0.45	0.54	0.48	0.51	0.49	0.58	0.52
SE ±	0.01	0.02	0.01		0.01	0.01	0.02		0.02	0.02	0.03	
CD 5%	0.04	0.05	0.04		0.03	0.05	0.07		0.05	0.05	0.09	

Table 3. Effect of different varieties and treatments on ascorbic acid (mg/100 g) of stored guava nectar. T_1 : 20% pulp, 13% TSS, 0.3% acidity, T_2 : 20% pulp, 15% TSS, 0.3% acidity, T_3 : 20% pulp, 17% TSS, 0.3% acidity, T_4 : 20% pulp, 19% TSS, 0.3% acidity. AS : Allahabad Safeda, L-49 : Lucknow-49, CR : Chittidar.

Varieties / Treatments	0 (at the time of preparation)				Storage period (days) 15				30				45			
	AS	L-49	CR	Mean	AS	L-49	CR	Mean	AS	L-49	CR	Mean	AS	L-49	CR	Mean
T_1	4.72	5.67	4.00	4.80	4.65	5.48	3.60	4.58	4.57	5.19	3.25	4.34	4.49	4.76	2.87	4.04
T_2	5.21	6.70	4.28	5.40	5.13	6.42	3.78	5.11	5.09	6.12	3.53	4.92	4.82	6.06	3.44	4.77
T_3	6.87	7.57	6.59	7.01	6.36	7.34	6.32	6.67	6.12	7.30	6.03	6.48	6.07	7.11	5.75	6.31
T_4	4.56	4.46	3.55	4.19	4.49	4.39	3.38	4.09	4.24	4.29	3.07	3.87	4.20	4.19	2.87	3.76
Mean	5.34	6.10	4.61	5.35	5.16	5.91	4.27	5.11	5.01	5.73	3.97	4.90	4.90	5.53	3.73	4.72
SE ±	0.127	0.075	0.078		0.148	0.124	0.064		0.063	0.048	0.054		0.077	0.104	0.044	
CD (5%)	0.415	0.245	0.256		0.482	0.406	0.209		0.206	0.474	0.177		0.252	0.341	0.145	

Table 3. Continued.

Varieties / Treatments	Storage period (days) 60				75				90			
	AS	L-49	CR	Mean	AS	L-49	CR	Mean	AS	L-49	CR	Mean
T_1	4.46	4.26	2.73	3.82	4.36	4.20	2.58	3.71	3.95	2.46	3.57	3.95
T_2	4.80	5.97	3.29	4.69	4.51	5.89	3.13	4.51	5.87	3.10	4.48	5.87
T_3	5.99	6.92	5.57	6.16	5.87	6.90	5.41	6.06	6.83	5.25	5.90	6.83
T_4	4.12	4.07	2.76	3.65	3.87	3.83	2.67	3.46	3.29	2.47	3.17	3.29
Mean	4.84	5.31	3.59	4.58	4.66	5.21	3.45	4.44	4.53	4.98	3.32	4.28
SE ±	0.100	0.068	0.161		0.058	0.083	0.132		0.068	0.088	0.137	
CD 5%	0.326	0.223	0.524		0.188	0.270	0.429		0.221	0.289	0.447	

Similar reduction in ascorbic acid content in guava beverages was reported by Baramanray et al. (5—7). Table 4 shows that reducing sugar content in guava nectar showed an increasing trend with increasing period of storage. At the end of 90 days of storage, the variety L-49 contained the maximum reducing sugar content (7.12%), while Allahabad Safeda and Chittidar recorded 6.55% and 6.06%, respectively.

Table 4. Effect of different varieties and treatments on reducing sugar (%) of stored guava nectar. T_1 : 20% pulp, 13% TSS, 0.3% acidity, T_2 : 20% pulp, 15% TSS, 0.3% acidity, T_3 : 20% pulp, 17% TSS, 0.3% acidity, T_4 : 20% pulp, 19% TSS, 0.3% acidity. AS : Allahabad Safeda, L-49 : Lucknow-49, CR : Chittidar.

Varieties / Treatments	0 (at the time of preparation)				Storage period (days) 15				30				45			
	AS	L-49	CR	Mean	As	L-49	CR	Mean	AS	L-49	CR	Mean	AS	L-49	CR	Mean
T_1	3.79	3.82	3.75	3.79	3.86	3.93	3.86	3.88	3.92	3.99	3.94	3.95	3.99	4.09	4.02	4.03
T_2	4.15	4.46	4.00	4.20	4.22	4.52	4.07	4.27	4.30	4.61	4.15	4.36	4.57	4.89	4.29	4.58
T_3	5.85	6.17	5.75	5.93	5.92	6.24	5.83	6.00	6.00	6.30	5.90	6.07	6.30	6.59	5.97	6.29
T_4	8.50	8.70	8.25	8.48	8.58	8.79	8.32	8.56	8.65	8.85	8.40	8.63	8.74	9.22	8.57	8.84
Mean	5.57	5.79	5.44	5.60	5.65	5.87	5.52	5.68	5.72	5.94	5.60	5.75	5.90	6.20	5.71	5.94
SE ±	0.182	0.199	0.181		0.162	0.175	0.260		0.188	0.159	0.291		0.227	0.192	0.181	
CD 5%	0.595	0.648	0.590		0.528	0.571	0.848		0.612	0.518	0.947		0.741	0.626	0.591	

Table 4. Continued.

Varieties / Treatments	Storage period (days) 60 AS	60 L-49	60 CR	60 Mean	75 AS	75 L-49	75 CR	75 Mean	90 AS	90 L-49	90 CR	90 Mean
T_1	4.10	4.19	4.12	4.14	4.27	4.30	4.26	4.28	4.37	4.38	4.38	4.38
T_2	4.73	5.16	4.40	4.57	5.01	5.68	4.49	5.06	5.27	5.99	4.54	5.27
T_3	6.43	6.78	6.16	6.30	6.62	7.23	6.22	6.69	6.82	7.72	6.30	6.95
T_4	9.02	9.58	8.75	8.74	9.41	9.98	8.86	9.42	9.75	10.39	8.89	9.71
Mean	6.07	6.43	5.86	5.90	6.33	6.80	5.96	6.36	6.55	7.12	6.06	6.58
SE ±	0.207	0.182	0.157		0.218	0.152	0.151		0.218	0.198	0.199	
CD 5%	0.677	0.595	0.510		0.712	0.497	0.491		0.710	0.645	0.649	

The variations in different fractions of sugar might be due to hydrolysis of polysaccharides like starch, pectin and inversion of non-reducing sugar into reducing sugar, as increase in reducing sugar was correlated with the decrease in non-reducing sugar. Table 5 shows that total sugar content in guava nectar showed an increasing trend with increasing period of storage (0—90 days). At 90 days, guava nectar of variety Lucknow-49 contained the maximum total sugar (16.28%), while, Allahabad Safeda and Chittidar had found 15.62% and 15.30% total sugar. The increased level of total sugar was probably due to conversion of starch and pectin into simple sugars. Similar findings were reported by Murari and

Table 5. Effect of different varieties and treatments on total sugar (%) of stored guava nectar. T_1 : 20% pulp, 13% TSS, 0.3% acidity, T_2 : 20% pulp, 15% TSS, 0.3% acidity, T_3 : 20% pulp, 17% TSS, 0.3% acidity, T_4 : 20% pulp, 19% TSS, 0.3% acidity. AS : Allahabad Safeda, L-49 : Lucknow-49, CR : Chittidar.

Varieties / Treatments	Storage period (days) 0 (at the time of preparation) AS	0 L-49	0 CR	0 Mean	15 AS	15 L-49	15 CR	15 Mean	30 AS	30 L-49	30 CR	30 Mean	45 AS	45 L-49	45 CR	45 Mean
T_1	13.15	13.52	12.84	13.17	13.17	14.06	13.07	13.44	13.48	14.00	12.89	13.46	13.46	14.09	12.59	13.38
T_2	14.15	14.69	12.47	13.77	14.17	14.53	13.67	14.12	14.35	14.85	13.56	14.25	14.70	14.90	13.65	14.42
T_3	16.15	16.80	14.52	15.83	16.35	16.82	13.39	15.52	16.21	16.89	14.52	15.87	16.22	16.71	15.76	16.23
T_4	18.15	18.25	16.23	17.54	18.16	18.27	16.53	17.65	18.20	18.30	17.43	17.89	18.30	18.74	17.82	18.29
Mean	15.40	15.82	14.02	15.08	15.47	15.92	14.16	15.18	15.65	16.01	14.60	15.39	15.67	16.11	14.95	15.58
SE ±	0.296	0.386	0.400		0.319	0.213	0.459		0.481	0.378	0.321		0.242	0.348	0.332	
CD 5%	0.966	1.260	1.306		1.040	0.694	1.497		1.567	1.232	1.045		0.789	1.134	1.082	

Table 5. Continued.

Varieties / Treatments	Storage period (days) 60 AS	60 L-49	60 CR	60 Mean	75 AS	75 L-49	75 CR	75 Mean	90 AS	90 L-49	90 CR	90 Mean
T_1	13.58	14.24	12.71	13.51	13.27	14.01	13.01	13.43	13.30	15.36	13.02	13.89
T_2	14.66	15.38	14.07	14.70	14.34	14.91	13.84	14.36	14.45	14.69	13.72	14.29
T_3	16.25	16.57	15.70	16.17	16.26	17.06	15.83	16.38	16.27	16.80	16.14	16.40
T_4	18.42	18.44	17.92	18.26	18.43	18.76	17.95	18.38	18.44	18.25	18.30	18.33
Mean	15.73	16.16	15.10	15.66	15.58	16.19	15.16	15.64	15.62	16.28	15.30	15.73
SE ±	0.226	0.296	0.246		0.232	0.296	0.278		0.518	0.352	0.209	
CD 5%	0.737	0.966	0.802		0.757	0.964	0.906		1.688	1.149	0.682	

Table 6. Effect of different varieties and treatments on non-reducing sugar (%) of stored guava nectar. T_1 : 20% pulp, 13% TSS, 0.3% acidity, T_2 : 20% pulp, 15% TSS, 0.3% acidity, T_3 : 20% pulp, 17% TSS, 0.3% acidity, T_4 : 20% pulp, 19% TSS, 0.3% acidity, AS : Allahabad Safeda, L-49 : Lucknow-49, CR, Chittidar.

Varieties / Treatments	Storage period (days)															
	0 (at the time of preparation)				15				30				45			
	As	L-49	CR	Mean	AS	L-49	CR	Mean	AS	L-49	CR	Mean	AS	L-49	CR	Mean
T_1	9.65	10.03	9.19	9.63	9.31	9.80	9.24	9.45	9.28	9.46	9.31	9.35	9.24	9.80	9.03	9.36
T_2	10.18	10.25	9.13	9.89	9.95	10.19	9.48	9.87	9.90	10.51	9.00	9.80	9.70	9.88	9.13	9.57
T_3	10.30	10.40	9.72	10.10	10.24	10.44	9.09	9.92	10.20	10.59	9.40	10.06	9.92	10.58	9.59	10.03
T_4	9.62	9.93	9.42	9.66	9.58	9.98	9.34	9.63	9.55	9.70	9.29	9.51	9.56	9.77	9.10	9.48
Mean	9.94	10.15	9.37	9.82	9.77	10.10	9.28	9.72	9.73	10.06	9.25	9.68	9.61	10.01	9.21	9.61
SE ±	0.127	0.075	0.078		0.148	0.124	0.064		0.063	0.048	0.054		0.077	0.104	0.044	
CD 5%	0.415	0.245	0.256		0.482	0.406	0.209		0.206	0.474	0.177		0.252	0.341	0.145	

Table 6. Continued.

Varieties / Treatments	Storage period (days)											
	60				75				90			
	AS	L-49	CR	Mean	AS	L-49	CR	Mean	AS	L-49	CR	Mean
T_1	9.15	9.77	9.08	9.33	9.00	8.92	9.07	9.00	8.93	8.82	8.03	8.59
T_2	9.61	9.92	8.83	9.45	9.33	9.69	8.47	9.16	9.08	9.66	8.38	9.04
T_3	9.82	10.14	9.38	9.78	9.64	9.95	8.39	9.33	9.45	9.88	8.09	9.14
T_4	9.40	9.92	8.52	9.28	9.02	9.47	8.38	8.96	8.69	9.31	7.63	8.54
Mean	9.49	9.94	8.95	9.46	9.25	9.51	8.58	9.11	9.04	9.42	8.03	8.83
SE ±	0.100	0.068	0.161		0.058	0.083	0.132		0.068	0.088	0.137	
CD 5%	0.326	0.223	0.524		0.188	0.270	0.429		0.221	0.289	0.447	

Verma (10) and Baramanray et al. (5) in guava nectar and by Shrivastava (11) in mango beverages. The non-reducing sugar content in guava nectar showed a decreasing trend with increasing period of storage (0—90 days) (Table 6). At the end of 90 days of storage, the nectar of variety Lucknow-49 contained the maximum non-reducing sugar content (9.42%) whereas remaining two varieties Allahabad Safeda and

Table 7. Effect of different varieties and treatments on Organoleptic score of stored guava nectar. T_1 : 20% pulp, 13% TSS, 0.3% acidity, T_2 : 20% pulp, 15% TSS, 0.3% acidity, T_3 : 20% pulp, 17% TSS, 0.3% acidity, T_4 : 20% pulp, 19% TSS, 0.3% acidity. AS : Allahabad Safeda, L-49 : Lucknow-49, CR : Chittidar.

Varieties / Treatments	Storage period (days)															
	0 (at the time of preparation)				15				30				45			
	AS	L-49	CR	Mean	AS	L-49	CR	Mean	AS	L-49	CR	Mean	AS	L-49	CR	Mean
T_1	7.43	6.04	6.03	6.50	7.40	6.03	5.96	6.47	7.34	5.96	5.88	6.39	7.29	5.88	5.86	6.34
T_2	8.31	7.97	7.27	7.85	8.25	7.70	7.10	7.68	8.19	7.54	6.93	7.55	8.09	7.42	6.82	7.44
T_3	9.00	8.99	8.41	8.80	8.90	8.91	8.36	8.72	8.73	8.62	8.28	8.54	8.47	8.23	8.01	8.24
T_4	7.63	6.98	6.37	7.00	7.51	6.94	6.21	6.89	7.38	6.38	6.04	6.60	6.72	6.52	6.03	6.42
Mean	8.09	7.50	7.02	7.54	8.02	7.40	6.91	7.44	7.91	7.13	6.78	7.27	7.64	7.01	6.68	7.11
SE ±	0.182	0.281	0.296		0.211	0.271	0.263		0.232	0.302	0.250		0.179	0.276	0.282	
CD 5%	0.593	0.918	0.964		0.689	0.883	0.858		0.758	0.984	0.816		0.585	0.901	0.918	

Table 7. Continued.

Varieties / Treatments	Storage period (days) 60 AS	60 L-49	60 CR	60 Mean	75 AS	75 L-49	75 CR	75 Mean	90 AS	90 L-49	90 CR	90 Mean
T_1	7.23	5.52	5.82	6.19	7.17	5.82	5.79	6.26	7.14	5.79	5.74	6.22
T_2	7.97	7.30	6.71	7.33	7.89	7.14	6.68	7.24	7.59	6.96	6.65	7.07
T_3	8.02	8.02	7.72	7.92	8.23	7.92	7.71	7.96	8.49	7.78	7.71	7.99
T_4	6.31	6.31	6.01	6.21	6.47	6.26	5.84	6.19	6.72	5.99	5.73	6.13
Mean	7.38	6.79	6.57	6.91	7.44	6.79	6.51	6.91	7.48	6.63	6.44	6.85
SE ±	0.159	0.284	0.255		0.226	0.263	0.271		0.176	0.224	0.275	
CD (5%)	0.517	0.927	0.832		0.737	0.858	0.884		0.575	0.732	0.895	

Chittidar contained 9.04% and 8.03%, respectively. The variations in different fractions of sugar might be due to hydrolysis of polysaccharides like starch, pectin and inversion of non-reducing sugar into reducing sugar, as increase in reducing sugar was correlated with the decrease in non-reducing sugar. The organoleptic evaluation of guava nectar showed decreasing trend with increasing period of storage (Table 7). After 90 days of storage nectar prepared from variety Allahabad Safeda (7.48) had highest organoleptic score followed by Lucknow-49 (6.63) and Chittidar (6.44). It was also observed that nectar of variety Allahabad Safeda and Lucknow-49 was highly acceptable upto 90 days of storage.

There was a considerable decrease in increasing sensory mean score for taste, flavor and overall acceptability during storage. The sensory mean score for each attribute was highest on the day of preparation and decreased with increasing period of storage. There are many extrinsic factors which determine the storage stability of products and temperature plays an important role among them. There are certain biochemical changes which occurs under low pH and high temperature that leads to formation of brown pigment and produce off-flavour increasing the beverages. The other possible reasons could be the loss of volatile aromatic substances responsible for flavor and taste which decreased acceptability in storage. The present findings are in accordance with Baramanray et al. (5) in guava nectar.

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