E-ISSN: 2663-1067
P-ISSN: 2663-1075
NAAS Rating: 4.74
www.hortijournal.com
IJHFS 2025; 7(7): 15-19
Received: 11-04-2025
Accepted: 13-05-2025

Vishal Sharma
Department of Agriculture (Horticulture) Fruit Science, Faculty of Agriculture and Veterinary Sciences, Mewar University Gangrar, Chittorgarh, Rajasthan, India

Manohar Lal Meghwal
Department of Agriculture (Horticulture) Fruit Science, Faculty of Agriculture and Veterinary Sciences, Mewar University Gangrar, Chittorgarh, Rajasthan, India

Karishma
Department of Agriculture (Horticulture) Fruit Science, Faculty of Agriculture and Veterinary Sciences, Mewar University Gangrar, Chittorgarh, Rajasthan, India

Champa Lal Regar
Department of Agriculture (Horticulture) Fruit Science, Faculty of Agriculture and Veterinary Sciences, Mewar University Gangrar, Chittorgarh, Rajasthan, India

Anubhav Galav
Department of Agriculture (Horticulture) Fruit Science, Faculty of Agriculture and Veterinary Sciences, Mewar University Gangrar, Chittorgarh, Rajasthan, India

Neelu Jain
Department of Agriculture (Horticulture) Fruit Science, Faculty of Agriculture and Veterinary Sciences, Mewar University Gangrar, Chittorgarh, Rajasthan, India

Corresponding Author:
Vishal Sharma
Department of Agriculture (Horticulture) Fruit Science, Faculty of Agriculture and Veterinary Sciences, Mewar University Gangrar, Chittorgarh, Rajasthan, India

Biochemical properties of Guava Nectar influenced with different pulp concentration during storage

Vishal Sharma, Manohar Lal Meghwal, Karishma, Champa Lal Regar, Anubhav Galav and Neelu Jain

DOI: https://www.doi.org/10.33545/26631067.2025.v7.i7a.332

Abstract
A lab experiment was conducted at Post harvest and Value Addition Laboratory, Mewar University Gangrar, Chittorgarh (Rajasthan) during December to March to evaluation of biochemical properties of guava nectar. The result revealed that the highest TSS 17.00°Brix, titrable acidity (0.47%), ascorbic acid (29.00 mg/100g) with lower acidity (0.47%) and pH (3.7) after 90 days was recorded with B1P1 (13°Brix, 10% pulp)**.**This treatment consistently showed higher stability in total soluble solids, titratable acidity, ascorbic acid content, and maintained optimal pH levels. Therefore, the use of 10% pulp with 13°Brix TSS is recommended for commercial production of guava nectar to ensure better shelf life and nutritional quality.

Keywords: Guava nectar, biochemical, storage period, TSS

1. Introduction
Fruits are not only important sources of nutrients but are also valued for their refreshing qualities and role in promoting good health. The commercial production of fruit beverages is a relatively recent phenomenon. Before 1930, such processing was limited and largely non-commercial. Guava is another tropical fruit known for its high ascorbic acid content and distinct aroma. It is used extensively in both fresh and processed forms. Guava is commonly transformed into a range of products, including jam, jelly, nectar, RTS beverages, canned slices, and even ice creams and toffees. The fruit is, however, highly perishable, limiting its shelf life in fresh form (Singh *et al*., 2011) [15]. Processing guava into beverage products like blended nectar ensures that its nutritional and functional benefits are retained for longer periods while catering to the growing demand for natural fruit-based drinks. Guava fruits are very rich in ascorbic acid and contain an appreciable amount of minerals such as phosphorus (23-37 mg/100 g), calcium (14-30 mg/100 g), iron (0.6 -1.4 mg/100 g. The term "nectar" originates from the Greek word *néktar*, meaning “drink of the gods.” In the context of fruit beverages, nectar refers to a non-carbonated, pulp-rich drink that retains much of the fruit’s original taste, flavor, and nutrients. Fruit nectar is characterized by its smooth texture, uniform consistency, and stability, achieved through the homogenization of fruit pulp and sweeteners. Among the various fruit nectars-such as those made from guava, kokum, jamun, pineapple, custard apple, banana, citrus, pomegranate, aonla, and litchi-mango nectar stands out due to its organoleptic appeal, wide acceptability, and nutritional richness. Despite significant research into the preservation and processing of guava nectar there remains a gap in literature when it comes to the enrichment of guava nectar with guava. The unique blend of these three components has the potential to improve not just the nutritional value but also the organoleptic quality and functional health benefits of the beverage. As modern consumers increasingly demand beverages that are natural, nutritious, and possess therapeutic properties, there is a strong case for developing such blended nectar drinks as part of functional beverage innovation (Rashid *et al.* 2021) [12].

2. Materials and Methods
A lab experiment was conducted during December to March of 2024-25 at Post Harvest and Value Addition Laboratory, Department of Agriculture (Horticulture) Fruit Science, Faculty of Agriculture and Veterinary Sciences, Mewar University Gangrar, Chittorgarh (Rajasthan).

The experiment was laid out in FCRD (Factorial Completely Randomized Design) with two levels and three replications. In level-I, the pulp percentage like 10, 12, 15 and 18% pulp and level-II, TSS content in pulp like 13, 15 and 18 ^{0}Brix. The treatment combination is P_1B_1 (Pulp 10% + TSS 13°Bx), P_2B_1 (Pulp 12% + TSS 13°Bx), P_3B_1 (Pulp 15% + TSS 13°Bx), P_4B_1 (Pulp 18% + TSS 13°Bx), P_1B_2 (Pulp 10% + TSS 15°Bx), P_2B_2 (Pulp 12% + TSS 15°Bx), P_3B_2 (Pulp 15% + TSS 15°Bx), P_4B_2 (Pulp 18% + TSS 15°Bx), P_1B_3 (Pulp 10% + TSS 18°Bx), P_2B_3 (Pulp 12% + TSS 18°Bx), P_3B_3 (Pulp 15% + TSS 18°Bx) and P_4B_3 (Pulp 18% + TSS 18°Bx). The method for biochemical properties analysis is followed standard method of particular parameters at different duration like 0, 30, 45, 60 and 90 days after storage.

3. Results and Discussion

3.1 Total Soluble Solids (^{0}Brix)

At the beginning of storage, the total soluble solids (TSS) of guava nectar varied with different combinations of pulp and initial TSS levels. The highest TSS (15.50°Brix) was recorded in the sample with 13°Brix (B1) and 15% pulp (P3). The lowest value was observed in 18°Brix (B3) with 15% pulp (P3), recording 12.20°Brix. Although statistically non-significant (NS), trends suggested a preference for moderate pulp and TSS levels to achieve higher initial °Brix. After 30 days, a slight decline in TSS was observed across most samples. The highest TSS (15.90°Brix) was maintained in 13°Brix (B1) with 15% pulp (P3). The lowest TSS (12.60°Brix) was seen in 18°Brix (B3) with 12% pulp (P3). On average, pulp level P1 (7%) maintained the highest °Brix (15.0°Brix), while P4 (15%) recorded the lowest (13.20°Brix). The data suggests that lower to moderate pulp levels helped in retaining TSS better during short-term storage. By day 45, the downward trend in TSS values continued. The sample with 13°Brix (B1) and 12% pulp (P3) recorded the highest °Brix (16.3), followed by 15°Brix (B2) with 10% pulp (P2) at 14.9°Brix. The lowest value was recorded in 18°Brix (B3) with 15% pulp (P4) at 13.0°Brix. Among pulp treatments, P1 (7%) averaged the highest TSS (15.3°Brix), while P4 again had the lowest mean (13.6°Brix). This indicates that very high pulp concentrations negatively impact TSS retention over time. At 60 days of storage, the highest TSS (16.60°Brix) was found in the sample with 12% pulp (P3) and 13°Brix (B1), showing that moderate pulp and low initial TSS still performed well. The lowest TSS (13.20°Brix) was in the combination of 12% pulp (P3) with 18°Brix (B3). Among pulp levels, P1 recorded the highest average (15.60°Brix), while P4 had the lowest (13.90°Brix). The consistent decline in TSS was evident, especially with increasing pulp or TSS concentration. By the 90th day, total soluble solids had further decreased in all samples. The maximum °Brix (17.00°Brix) was maintained in the 12% pulp (P3) with 13°Brix (B1) treatment. The lowest value (13.50°Brix) was found in 12% pulp (P3) with 18°Brix (B3), again showing the detrimental effect of high initial TSS on long-term stability. This final reading clearly suggests that moderate pulp levels (around 10–12%) combined with lower or moderate initial TSS (13–15°Brix) are best suited for preserving total soluble solids during prolonged storage. Similar result also reported by Khalid *et al.* (2019) [5], Khan *et al* (2020) [6], Gulhan *et al* (2023) [4] and Das *et al*. (2023) [2].

3.2 Titrable acidity (%)

At the start of storage, titratable acidity (%) ranged between 0.28% and 0.40% across different combination was statistically significant with pulp, TSS and interaction of both. After 30 days, acidity levels increased slightly across all samples. The maximum acidity (0.42%) was recorded again in 10% pulp (P2) with 13°Brix (B1), while the lowest (0.30%) was in 12% pulp (P3) with 18°Brix (B3). Overall, the mean acidity across pulp levels was highest in P2 (0.36%) and lowest in P4 (0.33%). This trend suggests that a 10% pulp level enhances acidity retention during early storage. Among TSS levels, B2 (15°Brix) recorded the highest average acidity (0.36%), suggesting that moderate initial TSS may also contribute to acidity stability. The differences At 45 days, acidity further increased slightly. The peak value (0.44%) was found in P2 (10%) with B1 (13°Brix), continuing the consistent trend from earlier days. The lowest value (0.32%) was in 15% pulp (P4) with B2 (15°Brix). P2 again had the highest mean (0.38%), while P4 had the lowest (0.34%). These results confirm that a pulp concentration of around 10% supports better acidity retention. Mean acidity across TSS levels was also highest in B1 (0.36%). The differences remained statistically significant with pulp, TSS and interaction of both. A continued rise in acidity was recorded after 60 days. The highest titratable acidity (0.45%) was noted in P2 (10%) with B1 (13°Brix), and the lowest (0.32%) in P1 (12%) with B1 (18°Brix). On average, P2 had the highest acidity (0.40%). B1 and B2 showed higher stability than B3 across pulp levels. These differences were statistically significant with pulp, TSS and interaction of both that indicating clear effects of both pulp and TSS levels on acidity retention after two months. By the 90th day, acidity reached its peak levels. The sample with 10% pulp (P2) and 13°Brix (B1) recorded the highest acidity (0.47%). In contrast, the lowest value (0.34%) appeared in 7% pulp (P1) with B1 (13°Brix). P2 (10%) maintained the highest mean value of 0.42%, while P4 (15%) had the lowest (0.38%). Among TSS levels, B1 consistently recorded higher acidity, followed by B2 and then B3. This pattern indicates that moderate pulp and lower TSS concentrations help preserve titratable acidity over prolonged storage. The differences remained significant with pulp, TSS and interaction of both. Same findings also observed Sherzad *et al*., (2017) [14], Meghwal *et al.* (2017) [8], Kumar and Deen (2017) [7] and Abedelmaksoud *et al.* (2024) [1].

3.3 Ascorbic acid (mg/100g)

The initial ascorbic acid content ranged from 30.0 to 39.0 mg/100 g, with the maximum (39.0 mg/100g) observed in B1P1 (13°Brix TSS and 10% pulp) and the minimum (30.0 mg/100g) in B3P3 (18°Brix, 15% pulp). The overall mean was highest in P1 (10% pulp) = 36.7 mg/100 g, followed by P3 = 34.7 mg/100 g. Among TSS levels, B1 (13°Brix) gave the highest average (36.8 mg/100 g), indicating that lower TSS and lower pulp levels retained more ascorbic acid at the beginning. However, the differences among treatments were statistically non-significant at this stage. The ascorbic acid content declined to a range of 27.0 to 35.0 mg/100 g. The highest value (35.0 mg/100 g) was again observed in B1P1, while the lowest (27.0 mg/100 g) was in B3P3. The mean ascorbic acid content remained highest in P1 = 33.3 mg/100 g, while among TSS levels, B1 had the highest mean (33.5 mg/100 g). At this point, the effect of both pulp and TSS

levels became statistically significant with pulp, TSS and interaction of both. A continued decrease in ascorbic acid was noted, ranging from 25.0 to 33.0 mg/100 g. B1P1 still maintained the highest (33.0 mg/100 g), and B3P3 had the lowest (25.0 mg/100 g). The highest mean was in P1 = 31.3 mg/100 g, and B1 remained the top TSS treatment (31.5 mg/100 g). Statistical differences were significant, reaffirming that lower TSS (13°Brix) and lower pulp (7–10%) better preserved ascorbic acid during early storage. Ascorbic acid values ranged from 23.0 to 31.0 mg/100 g, with B1P1 and B1P3 both recording the highest values (31.0 mg/100 g), and B3P3 (23.0 mg/100 g) showing the lowest. The average was highest in P1 (29.3 mg/100 g) and among TSS levels, B1 = 29.5 mg/100 g. This indicates significant loss over time, although P1 and B1 combinations still held more ascorbic acid than others. The effect of pulp, TSS, and their interaction remained statistically significant, with clear showing treatment impacts. By the final stage of storage, ascorbic acid content decreased further, ranging from 21.0 to 29.0 mg/100 g. The highest (29.0 mg/100 g) was recorded in B1P1, while the lowest (21.0 mg/100 g) was in B3P3. Mean values again reflected that P1 (7%) = 26.7 mg/100 g and B1 (13°Brix) = 27.0 mg/100g were the best at retaining ascorbic acid. Differences across treatments were statistically significant with pulp, TSS and interaction of both. Similar concluded with Ferdous and Alim (2018) [3], Wani *et al* (2019) [18], Sobhana (2019) [16], Sharma and Sharma (2019) [13] and Swain *et al* (2024) [17].

3.4 pH

The initial pH ranged from 3.7 to 4.0. The highest value (4.0) was observed in B1P4 and B2P4 (both 13–15°Brix with 18% pulp), while the lowest (3.7) occurred in B3P2. The mean pH across pulp levels was quite consistent, with a general value of 3.9, indicating a moderately acidic nature of guava nectar. There were no statistically significant differences among treatments at this stage, as denoted by NS (Not Significant). A slight decline in pH was recorded, with values ranging from 3.6 to 3.9. The highest pH (3.9) remained with B1P4 and B2P4, while the lowest (3.6) was observed in B3P2. The overall mean pH slightly decreased to 3.8, suggesting a gradual increase in acidity over time. Statistical analysis indicated that the differences were significant both pulp and TSS, showing that TSS and pulp levels started affecting acidity with storage. The pH dropped further to a range of 3.5 to 3.7, with the lowest (3.5) seen in B3P2 and B3P3, and the highest (3.7) in B1P1, B1P4, B2P4. The mean pH dropped to 3.7, confirming continued acidification. Treatment differences for pulp, TSS, and their interaction were all statistically significant with main effects and interaction, indicating the growing influence of treatment combinations on nectar pH. The pH ranged from 3.5 to 3.7, maintaining a moderate acid level. The highest values (3.7) were recorded in B1P1, B1P4, B2P4, while the lowest (3.5) was again seen in B3P1. The mean pH remained steady at 3.6, further affirming that lower TSS levels (B1, B2) were better at maintaining pH compared to B3 (18°Brix), which consistently showed lower pH due to higher sugar concentration potentially promoting microbial activity. All treatment effects were significant. By the final stage, pH values remained relatively stable between 3.4 and 3.7. The highest pH (3.7) was observed in B1P4 and B2P4, while the lowest (3.4) occurred in B3P2. The overall mean pH stayed at 3.6, with pulp level P1 (7%) and TSS level B1 (13°Brix) best maintaining higher pH (i.e., less acidic). Differences were statistically significant with main effects and interaction indicating clear influence of both factors on pH during long-term storage. This result also supported by Navya *et al.* (2020) [9], Das *et al.*, (2023) [2], Poonam *et al.* (2022) [10], Rafique *et al.* (2023) [11] and Gulhane *et al.* (2023) [4].

Table 1: The effect of different levels of pulp and TSS concentration on total soluble solids (^{0}Brix) of Guava nectar

Total Soluble Solids (^{0}Brix)															
Storage period	**0 Days**					**30 Days**					**45 Days**				
Pulp / TSS	**P_1 (10%)**	**P_2 (12%)**	**P_3 (15%)**	**P_4 (18%)**	**Mean**	**P_1 (10%)**	**P_2 (12%)**	**P_3 (15%)**	**P_4 (18%)**	**Mean**	**P_1 (10%)**	**P_2 (12%)**	**P_3 (15%)**	**P_4 (18%)**	**Mean**
B_1 (13 ^{o}Brix)	15.1	13.5	15.5	13.8	14.5	15.5	13.9	15.9	14.1	14.9	15.8	14.1	16.3	14.5	15.2
B_2 (15 ^{o}Brix)	15.3	14.2	15.4	12.5	14.4	15.7	14.5	15.8	12.9	14.7	16.0	14.9	16.0	13.2	15.0
B_3 (18 ^{o}Brix)	13.6	14.3	12.2	12.4	13.1	13.9	14.7	12.6	12.7	13.5	14.1	15.0	12.9	13.0	13.8
Mean	14.7	14.0	14.4	12.9		15.0	14.4	14.8	13.2		15.3	14.7	15.1	13.6	
	S. Em	CD				S. Em	CD				S. Em	CD			
P (PULP)	0.05	0.13				0.05	0.14				0.05	0.14			
B (TSS)	0.04	0.12				0.04	0.12				0.04	0.12			
B (TSS) × P (PULP)	0.08	0.28				0.08	0.29				0.08	0.30			
Storage period	60 Days					90 Days									
Pulp / TSS	P_1 (10%)	P_2 (12%)	P_3 (15%)	P_4 (18%)	Mean	P_1 (10%)	P_2 (12%)	P_3 (15%)	P_4 (18%)	Mean					
B_1 (13 ^{o}Brix)	16.0	14.4	16.6	14.9	15.5	16.5	14.7	17.0	15.2	15.9					
B_2 (15 ^{o}Brix)	16.3	15.2	16.3	13.5	15.3	16.8	15.5	16.6	13.9	15.7					
B_3 (18 ^{o}Brix)	14.5	15.3	13.2	13.3	14.1	14.8	15.7	13.5	13.6	14.4					
Mean	15.6	15.0	15.4	13.9		16.0	15.3	15.7	14.2						
	S.Em	CD				S.Em	CD								
P (PULP)	0.05	0.14				2.20	0.13								
B (TSS)	0.04	0.12				1.91	0.12								
B (TSS)×P (PULP)	0.08	0.30				3.81	0.28								

Table 2: The effect of different levels of pulp and TSS concentration on Titrable acidity (%) of Guava nectar

Titrable acidity (%)															
Storage period	**0 Days**					**30 Days**					**45 Days**				
Pulp / TSS	**P_1 (10%)**	**P_2 (12%)**	**P_3 (15%)**	**P_4 (18%)**	**Mean**	**P_1 (10%)**	**P_2 (12%)**	**P_3 (15%)**	**P_4 (18%)**	**Mean**	**P_1 (10%)**	**P_2 (12%)**	**P_3 (15%)**	**P_4 (18%)**	**Mean**
B_1 (13 °Brix)	0.28	0.40	0.35	0.31	0.34	0.30	0.42	0.37	0.32	0.35	0.31	0.44	0.39	0.34	0.37
B_2 (15 °Brix)	0.37	0.33	0.36	0.29	0.34	0.39	0.35	0.38	0.31	0.36	0.41	0.37	0.40	0.32	0.38
B_3 (18 °Brix)	0.34	0.30	0.28	0.34	0.32	0.35	0.32	0.30	0.36	0.33	0.37	0.34	0.32	0.37	0.35
Mean	0.33	0.34	0.33	0.31		0.35	0.36	0.35	0.33		0.36	0.38	0.37	0.34	
	S.Em	CD				S.Em	CD				S.Em	CD			
P (PULP)	0.047	NS				0.001	0.003				0.001	0.003			
B (TSS)	0.041	NS				0.001	0.003				0.001	0.003			
B (TSS) × P (PULP)	0.082	NS				0.002	0.007				0.002	0.006			
Storage period	60 Days					90 Days									
Pulp / TSS	P_1 (10%)	P_2 (12%)	P_3 (15%)	P_4 (18%)	Mean	P_1 (10%)	P_2 (12%)	P_3 (15%)	P_4 (18%)	Mean					
B_1 (13 °Brix)	0.32	0.45	0.41	0.36	0.39	0.34	0.47	0.43	0.38	0.41					
B_2 (15 °Brix)	0.43	0.39	0.42	0.34	0.40	0.45	0.41	0.44	0.36	0.42					
B_3 (18 °Brix)	0.39	0.35	0.33	0.39	0.37	0.41	0.37	0.35	0.40	0.38					
Mean	0.38	0.40	0.39	0.36		0.40	0.42	0.41	0.38						
	S.Em	CD				S.Em	CD								
P (PULP)	0.001	0.003				0.001	0.003								
B (TSS)	0.001	0.004				0.001	0.004								
B (TSS) × P (PULP)	0.002	0.008				0.002	0.008								

Table 3: The effect of different levels of pulp and TSS concentration on ascorbic acid (Mg/100g) of Guava nectar

Ascorbic acid (Mg/100 g)															
Storage period	**0 Days**					**30 Days**					**45 Days**				
Pulp / **TSS**	**P_1 (10%)**	**P_2 (12%)**	**P_3 (15%)**	**P_4 (18%)**	**Mean**	**P_1 (10%)**	**P_2 (12%)**	**P_3 (15%)**	**P_4 (18%)**	**Mean**	**P_1 (10%)**	**P_2 (12%)**	**P_3 (15%)**	**P_4 (18%)**	**Mean**
B_1 (13 °Brix)	39.0	34.0	38.0	36.0	36.8	35.0	31.0	35.0	33.0	33.5	33.0	29.0	33.0	31.0	31.5
B_2 (15 °Brix)	37.0	35.0	36.0	33.0	35.3	34.0	32.0	33.0	30.0	32.3	32.0	30.0	31.0	28.0	30.3
B_3 (18 °Brix)	34.0	32.0	30.0	32.0	32.0	31.0	29.0	27.0	29.0	29.0	29.0	27.0	25.0	27.0	27.0
Mean	36.7	33.7	34.7	33.7		33.3	30.7	31.7	30.7		31.3	28.7	29.7	28.7	
	S.Em	CD				S.Em	CD				S.Em	CD			
P (PULP)	4.97	NS				0.10	0.30				0.10	0.28	4.97	14.52	
B (TSS)	4.31	NS				0.09	0.26				0.08	0.24	4.31	12.57	
B (TSS) × P (PULP)	8.62	NS				0.18	0.63				0.17	0.59	8.62	30.80	
Storage period	60 Days					90 Days									
Pulp / TSS	P_1 (10%)	P_2 (12%)	P_3 (15%)	P_4 (18%)	Mean	P_1 (10%)	P_2 (12%)	P_3 (15%)	P_4 (18%)	Mean					
B_1 (13 °Brix)	31.0	27.0	31.0	29.0	29.5	29.0	25.0	28.0	26.0	27.0					
B_2 (15 °Brix)	30.0	28.0	29.0	26.0	28.3	27.0	25.0	26.0	24.0	25.5					
B_3 (18 °Brix)	27.0	25.0	23.0	25.0	25.0	24.0	23.0	21.0	23.0	22.8					
Mean	29.3	26.7	27.7	26.7		26.7	24.3	25.0	24.3						
	S.Em	CD				S.Em	CD								
P (PULP)	0.09	0.26				0.08	0.24								
B (TSS)	0.08	0.22				0.07	0.20								
B (TSS) × P (PULP)	0.15	0.55				0.14	0.50								

Table 4: The effect of different levels of pulp and TSS concentration on pH of Guava nectar

pH															
Storage period	**0 Days**					**30 Days**					**45 Days**				
Pulp / TSS	**P_1 (10%)**	**P_2 (12%)**	**P_3 (15%)**	**P_4 (18%)**	**Mean**	**P_1 (10%)**	**P_2 (12%)**	**P_3 (15%)**	**P_4 (18%)**	**Mean**	**P_1 (10%)**	**P_2 (12%)**	**P_3 (15%)**	**P_4 (18%)**	**Mean**
B_1 (13 °Brix)	3.9	3.8	3.9	4.0	3.9	3.8	3.7	3.8	3.9	3.8	3.7	3.6	3.7	3.8	**3.7**
B_2 (15 °Brix)	3.9	3.8	3.9	4.0	3.9	3.8	3.7	3.8	3.9	3.8	3.7	3.6	3.7	3.8	**3.7**
B_3 (18 °Brix)	3.8	3.7	3.8	3.8	3.8	3.7	3.6	3.7	3.7	3.7	3.6	3.5	3.6	3.6	**3.6**
Mean	3.9	3.8	3.9	3.9		3.8	3.7	3.8	3.8	3.8	3.7	3.6	3.7	3.7	
	S.Em	CD				S.Em	CD				S.Em	CD			
P (PULP)	0.55	NS				0.01	0.03				0.01	0.03			
B (TSS)	0.48	NS				0.01	0.03				0.01	0.03			
B (TSS) × P (PULP)	0.96	NS				0.02	0.07				0.02	0.07			
Storage period	60 Days					90 Days									
Pulp / TSS	P_1 (10%)	P_2 (12%)	P_3 (15%)	P_4 (18%)	Mean	P_1 (10%)	P_2 (12%)	P_3 (15%)	P_4 (18%)	Mean					
B_1 (13 °Brix)	3.7	3.6	3.6	3.7	3.7	3.6	3.5	3.6	3.7	3.6					
B_2 (15 °Brix)	3.7	3.6	3.6	3.7	3.7	3.6	3.5	3.6	3.7	3.6					
B_3 (18 °Brix)	3.5	3.5	3.6	3.6	3.6	3.5	3.4	3.5	3.5	3.5					
Mean	3.6	3.6	3.6	3.7		3.6	3.5	3.6	3.6						
	S.Em	CD				S.Em	CD								
P (PULP)	0.01	0.03				0.01	0.03								
B (TSS)	0.01	0.03				0.01	0.03								
B (TSS) × P (PULP)	0.02	0.07				0.02	0.07								

4. Conclusion

Based on the findings of the present investigation, it can be concluded that the formulation containing 10% guava pulp and 13°Brix TSS (T_1: P_1B_1) was most effective in retaining the desirable biochemical parameters of guava nectar (cv. Taiwan Pink) during 90 days of storage. This treatment consistently showed higher stability in total soluble solids, titratable acidity, ascorbic acid content, and maintained optimal pH levels. Therefore, the use of 10% pulp with 13°Brix TSS is recommended for commercial production of guava nectar to ensure better shelf life and nutritional quality.

5. References

1. Abedelmaksoud TG, Hassan MA, Assous M, Khalaf-Allah AEM. Overall Quality Characteristics of Nectar Produced by Some Date Cultivars. Egypt J Chem. 2024;67(11):479-489.
2. Das K, Mia K, Nice JN, Zaman R, Alam SMS, Debnath MK. Development and quality evaluation of papaya jam with blended carrot. Agric Eng Int CIGR J Open Access. 2023;25(3):170-180.
3. Ferdous MJ, Alim MA. Physico-chemical properties of mixed jam from pineapple and sweet gourd. J Bangladesh Agric Univ. 2018;16(2):309-314.
4. Gulhane CA, Nachane VS, Gudwar AV, Burakale PV. Nutrient-dense jam made from herbal fruit: Preparation and evaluation. GSC Biol Pharm Sci. 2023;24(01):300-309.
5. Khalid M, Muneeb M, Shamrez B, Muhammad A, Ayub M, Durrani Y, *et al*. 13. Preparation and evaluation of strawberry and date blended juice ready to serve drink. Pure Appl Biol (PAB). 2019;8(4):2228-2237.
6. Khan A, Shah FN, Zeb Q, Zeeshan M, Iqbal H, Noor H, *et al*. Preparation and development of fig fruit jam blended with different levels of apple pulp. Pak J Sci Ind Res. 2020;63(2):113-119.
7. Kumar A, Deen B. Studies on preparation and storage of jelly from wood apple (*Limonia acidissima* L.) fruits. J Pharmacogn Phytochem. 2017;6(6):224-229.
8. Meghwal ML, Dalal SR, Meena NK, Shivaputra. Changes in chemical constituents of guava Nectar cv. 'Lalit' during different storage conditions. Res J Agric Sci. 2017;8(2):404-407.
9. Navya DV, Kukanoor L, Gorabal K, Bhat A, Jalawadi S. Studies on organoleptic qualities and color (L* a* b*) values of Karonda (*Carissa carandas* L.) blended squash during storage. J Pharmacogn Photochem. 2020;9:994-997.
10. Poonam S, Kapoor S, Sharma S, Aggarwal P. Enhancing quality and stability of guava nectar using tomato seed protein isolate and hydrolysate: physico-chemical, bioactive, rheological, and sensory assessment. J Food Meas Charact. 2022;1-14.
11. Rafique N, Mamoona T, Ashraf N, Hussain S, Ahmed F, Shah TA, *et al*. Exploring the nutritional and sensory potential of karonda fruit: Physicochemical properties, jam production, and quality evaluation. Food Sci Nutr. 2023;11:6931-6944.
12. Rashid MT, Sarpong F, Hashim MM, Jatoi MA, Safdar B, Baloch MS, *et al*. Quality Changes in Diet Phalsa Squash Formulation during Storage: A Kinetic and Statistical Interpretation of Key Parameters Degradation Mechanism. Int J Fruit Sci. 2021;21(1):804-818.
13. Sharma S, Sharma R. Optimization of nutritional health drink developed from guava, jamun and aloe vera. Int J Food Ferment Technol. 2019;9(2):125-131.
14. Sherzad A, Sreenivas KN, Ulla HMT, Emran SE, Dawlatzai A. Product Protocol Standardization of Strawberry (*Fragaria ananassa*) Based Blended Squash Concoction and Its Storage. Trends Biosci. 2017;10(28):6044-6051.
15. Singh G, Jaiswal A, Sharma R. Studies on the effect of storage on pH and acidity of fruit beverages. Indian Food Packer. 2011;65(4):35-40.
16. Sobhana. Evaluation of cashew varieties for RTS beverage and jam. Indian J Hortic. 2019;76(1):155-161.
17. Swain DD, Singh D, Wesley CJ. Value addition and standardization of mango jam (*Mangifera indica*). J Adv Biol Biotechnol. 2024;27(7):372-381.
18. Wani TA, Amin QA, Fauzia S, Dorjey N, Zargar BA, Tundup P, *et al*. Standardization, stability study and chemical properties of apricot jam prepared in cold arid region of Ladakh. Int J Curr Microbiol Appl Sci. 2019;8(5):495-499.