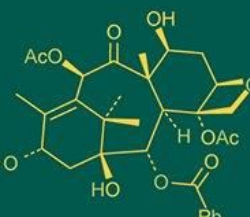


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Influence of papaya-guava pulp proportions on nutritional quality and consumer acceptability of fruit leather

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Abstract

This study investigated various blending proportions of papaya (*Carica papaya* L., cv. Red Lady) and Guava (*Psidium guajava* L., cv. Lalit) pulps (100:0, 80:20, 60:40, 50:50 and 40:60) for preparing a value-added fruit bar. Among the tested combinations, the equal proportion of papaya and guava pulp (50:50; T₄ treatment) proved to be the most suitable, as it achieved the highest sensory ratings for colour (8.85), texture (8.65), flavour (8.60), taste (8.60) and overall acceptability (8.67). Similarly, T₄ treatment also exhibited best nutritional quality, characterised by improved levels of ascorbic acid (127.32 mg 100 g⁻¹), total carotenoids (1218 µg 100 g⁻¹) and protein (1.00%). These findings suggest that a 1:1 papaya-guava pulp blend can be effectively used to develop a fruit bar with enhanced sensory appeal and nutritional value.

Keywords: Papaya-guava blend, fruit leather, fruit bar, pulp proportion, nutritional quality, sensory evaluation

Introduction

Papaya (*Carica papaya* L.) and Guava (*Psidium guajava* L.) are two major tropical fruit crops widely recognized for their nutritional value and commercial relevance. Papaya is often described as a highly beneficial fruit of the tropical and subtropical regions and is thought to have originated in Mexico within the genus *Carica*. In India, it is one of the leading fruit crops after mango, banana, citrus and guava. Papaya is particularly valued for its high vitamin A content (2020 IU per 100 g), along with appreciable levels of B-complex vitamins such as thiamine, riboflavin and niacin (Jain *et al.*, 2011)^[11].

Guava, commonly referred to as the “poor man’s apple”, is another widely grown fruit in tropical and subtropical climates. The crop is believed to have originated in tropical America, from Mexico to Peru, and has gradually attained global significance due to its hardy growth habit, heavy bearing potential, high vitamin C content and economic returns under relatively low management conditions. Its high ascorbic acid concentration contributes strong antioxidant activity, which plays an important role in protecting against oxidative stress and associated degenerative disorders (Kadam *et al.*, 2012)^[13]. The crop now enjoys expanding international demand, particularly for fresh consumption and processed products. Major guava-producing countries include India, Mexico, Brazil, Cuba, Venezuela, the United States, Australia, New Zealand, China and Thailand (Negi and Shailendra, 2007)^[12].

Transforming fresh fruits into dehydrated products such as fruit leathers is gaining importance as a strategy to extend shelf life and reduce post-harvest losses. Fruit leathers are thin, pliable sheets prepared from fruit puree combined with sugar, acid and pectin, and dried to a soft, chewy consistency (Natalia *et al.*, 2011)^[20]. Such products are light in weight, easy to handle, and economically attractive, especially during periods of excess fruit production availability. The papaya and guava fruits are highly perishable; hence value-addition through processing can enhance their marketability and year-round availability. Although papaya cv. Redlady has best qualities such as bright flesh colour, pleasant taste and low acidity, its characteristic odour may restrict consumer acceptance. In contrast, guava cv. Lalit has a pink flesh strong and appealing aroma, balanced acidity and a naturally high pectin content, and good antioxidants making it highly suitable for blending and product development (Attri *et al.*, 2014)^[4]. The blending of papaya cv. Redlady and guava cv. Lalit pulp may therefore yield nutritionally superior and sensory-acceptable blended products such as fruit bars

(Jain *et al.*, 2011)^[11].

Against this background, the present study was undertaken with the objective of identifying an optimal pulp combination for developing a high-quality, nutritionally enriched fruit bar.

Materials and Methods

Procurement of Raw Materials

This study was carried out at the College of Horticulture, Anantharajupeta, during 2015-2016. Papaya (*Carica papaya* L., cv. Red Lady) and Guava (*Psidium guajava* 'Lalit') fruits were used as the primary raw materials. Red Lady papaya is the major cultivar cultivated in the Kadapa district. It is known for its early maturity, vigorous growth habit and high yield. The fruits are typically short and oblong with red-coloured pulp, pronounced aroma and high sweetness. The guava cultivar 'Lalit' is a popular commercial type that produces medium-sized, round fruits with smooth skin that turns yellow upon ripening. The pulp is pink, contains relatively few soft seeds and exhibits good storage quality.

Fully mature and ripe fruits of both crops were sourced from farmers' fields located in the vicinity of Anantharajupeta and were used immediately for further processing.

Preparation of Papaya and Guava Pulp

Fully ripe fruits of papaya (*Carica papaya* L., cv. Red Lady) and Guava (*Psidium guajava* 'Lalit') were used for the study. The fruits were washed thoroughly in tap water and sliced into small pieces. Pulp was extracted using a mechanical pulper. Guava seeds were removed through the built-in sieve. Pulp recovery was higher in papaya (78.0%) than in guava (54.5%). The figure showing papaya cv Red lady Guava Lalit Blended bar of different treatments mentioned in plate section 4.2.

Blends were prepared by mixing 1 kg of pulp in the required proportions. Sugar (250 g) was added to each blend. The mixture was heated with constant stirring until the total soluble solids reached 50 °Brix. The product was then cooled slightly and potassium metabisulphite was added at 500 ppm.

Drying

The concentrated pulp was poured into ghee-coated trays and spread to a uniform thickness of 0.5 cm. The trays were dried in a cabinet dryer at 60 °C. After five hours, a second 0.5-cm layer was applied and drying continued for a further eight hours.

Cutting and Packaging

The dried sheets were cooled and cut into rectangular pieces (3 × 0.5 cm). Each piece was wrapped in butter paper, labelled and stored at ambient temperature (25-35 °C). The method followed Attri *et al.* (2014)^[4] with minor modifications.

Treatment details

In the present study, five blending ratios of papaya (*Carica papaya* L., cv. Red Lady) and guava (*Psidium guajava* 'Lalit') pulps were evaluated. The control treatment (T₁) consisted of 100% papaya pulp. In the remaining treatments, guava pulp was incorporated at increasing levels, resulting in papaya-guava pulp ratios of 80:20 (T₂), 60:40 (T₃), 50:50 (T₄) and 40:60 (T₅), respectively.

Physico-chemical Analysis

The biochemical and sensory properties of papaya-guava fruit bars were evaluated at 0, 30, and 60 days of storage. The five samples from each treatment were analyzed for physico-chemical attributes. The parameters measured included total soluble solids (TSS), pH, total sugars, reducing sugars, titratable acidity, ascorbic acid, and overall acceptability, following the standard procedures described by Ranganna (1986)^[23]. Moisture content was determined on a fresh-weight basis as per Saini (2001)^[27]. Protein content was estimated using the method of Lowry *et al.* (1951)^[18], and total carotenoids were measured following the protocol of Srivastava and Kumar (2009)^[32]. Microbial counts were determined according to Harrigan and McCance (1976)^[9].

Statistical Analysis

The data on physico-chemical and sensory parameters were analyzed using a Completely Randomized Design (CRD). Statistical evaluation was performed following the methodology of Panse and Sukhatme (1985)^[23].

Results and discussion

Moisture Content (%)

The moisture content of papaya-guava fruit bars varied slightly with pulp composition and storage duration (Fig 1). At 0 days of storage, the highest moisture content (15.05%) was observed in the control treatment (T₁, 100% papaya pulp), followed closely by T₂ (80% papaya + 20% guava) with 15.03%. The lowest moisture content at the initial stage was recorded in T₅ (40% papaya + 60% guava), which had 14.99%. A similar trend was observed at 30 days, where T₁ retained the highest moisture (15.04%) and T₅ the lowest (14.98%). At 60 days, the moisture content ranged from 15.02% in T₁ to 14.96% in T₅.

Overall, a slight decline in moisture content was noted with increasing storage time, regardless of the blending ratio. This reduction is likely due to gradual water loss from the fruit bars during storage (Bhatt and Jha, 2015)^[5]. These results are consistent with previous reports on guava leather by Safdar *et al.* (2014)^[26], indicating that moisture content decreases marginally over storage while remaining within acceptable limits for fruit leather products.

Total Soluble Solids (°Brix)

Total soluble solids (TSS) of papaya-guava fruit bars varied with pulp composition and storage period (Fig 1). At 0 days, TSS ranged from 74.15 °Brix in the control (T₁, 100% papaya) to 79.15 °Brix in T₅ (40% papaya + 60% guava). T₄ (50:50) and T₃ (60:40) recorded TSS values of 77.45 °Brix and 76.14 °Brix, respectively, which were statistically comparable to T₅.

After 30 days of storage, the highest TSS was observed in T₅ (79.94 °Brix), followed by T₄ (77.56 °Brix) and T₃ (76.94 °Brix). At 60 days, T₅ again showed the maximum TSS (80.05 °Brix), whereas the minimum was recorded in T₁ (75.39 °Brix).

The gradual increase in TSS during storage may be attributed to the conversion of insoluble solids into soluble fractions (Aradhitha *et al.*, 1996)^[2]. This trend is consistent with previous observations in guava leather (Sandhu *et al.*, 2001), blended papaya-guava products (Jain *et al.*, 2011)^[11], and guava jelly bars (Kuchi *et al.*, 2014)^[16].

Titration Acidity (%)

Titration acidity of the papaya-guava fruit bars varied with pulp composition and storage duration (Fig 1). At 0 days, the highest acidity (1.00%) was observed in T₅ (40% papaya + 60% guava), followed by T₄ (50:50) with 0.98% and T₃ (60:40) with 0.96%, which were statistically comparable. The lowest acidity (0.90%) was recorded in the control (T₁, 100% papaya).

After 60 days of storage, T₅ again showed the highest titration acidity (0.97%), comparable with T₄ (0.96%) and T₃ (0.93%). The minimum acidity at this stage was observed in T₁ (0.87%). Overall, a slight decline in acidity was noted with increasing storage time.

The slight reduction in acidity is likely associated with acid-base reactions, such as salt formation, and corresponds to a marginal increase in pH. These observations are in agreement with previous findings in apricot fruit bars (Sharma *et al.*, 2013) [15] and papaya toffees and leathers (Attri *et al.*, 2014) [4], where acidity decreased slightly during storage.

pH

Significant differences in pH were observed among papaya-guava fruit bar treatments at 0, 30, and 60 days of storage (Fig 2). At the initial stage, pH ranged from 3.59 in the control (T₁, 100% papaya) to 3.95 in T₃ (60% papaya + 40% guava). T₃ exhibited the highest pH, which was statistically comparable to T₂ (80:20, 3.91) and T₄ (50:50, 3.82). The lowest pH was recorded in T₁.

After 30 days, the highest pH remained in T₃ (3.95), closely followed by T₂ (3.92) and T₄ (3.83), while T₁ recorded the lowest value (3.59). At 60 days of storage, T₃ again had the highest pH (3.96), which was comparable to T₂ (3.92) and T₄ (3.83). T₁ exhibited the minimum pH of 3.60 at this stage.

Overall, a slight increase in pH was noted in all treatments over storage. This trend may be attributed to the formation of free acids and partial hydrolysis of pectin (Imran *et al.*, 2000) [10]. Similar observations have been reported for mango pulp (Durrani *et al.*, 2010) [6].

Reducing Sugars (%)

Reducing sugar content of papaya-guava fruit bars varied significantly with pulp composition and storage period (Fig 2). At 0 days, the highest reducing sugars were recorded in T₅ (40% papaya + 60% guava) at 43.76%, which was comparable to T₄ (50:50, 42.30%) and T₃ (60:40, 41.02%). The lowest value (35.27%) was observed in the control (T₁, 100% papaya).

After 30 days of storage, T₅ again exhibited the highest reducing sugars (44.87%), similar to T₄ (43.37%), while T₁ had the lowest (36.59%). At 60 days, the maximum reducing sugars were found in T₅ (45.36%), followed by T₄ (44.89%), whereas T₁ recorded the minimum (37.32%).

Overall, a slight increase in reducing sugars was observed in all treatments with storage. This rise may be attributed to the conversion of non-reducing sugars into reducing sugars and the hydrolysis of polysaccharides into monosaccharides during storage (Sharma *et al.*, 2013) [15]. These findings are consistent with earlier reports on sapota-papaya bars (Sreemathi *et al.*, 2008) [31].

Total Sugars (%)

Total sugar content of papaya-guava fruit bars varied with pulp composition and storage period (Fig 2). At 0 days, the highest total sugars were observed in T₁ (100% papaya) at

69.31%, which was comparable to T₃ (60% papaya + 40% guava, 67.42%) and T₄ (50:50, 66.54%). The lowest value at this stage was recorded in T₂ (80% papaya + 20% guava, 64.32%).

After 30 days, T₁ again showed the highest total sugars (69.29%), while T₄ had the lowest (63.27%). At 60 days, the maximum total sugars were retained in T₁ (69.15%), and the minimum was recorded in T₂ (59.34%).

A slight decline in total sugars was observed in all treatments over the storage period. This decrease may be due to the acid-catalyzed inversion of sugars into monosaccharides (Muralikrishna *et al.*, 1969) [19]. These results are in agreement with earlier studies on apricot fruit bars (Sharma *et al.*, 2013) [15] and papaya-based products, including toffee and leather (Attri *et al.*, 2014) [4].

Ascorbic Acid (mg/100 g)

Significant differences were observed in the ascorbic acid content of papaya-guava fruit bars at 0, 30, and 60 days of storage (Fig 3). At 0 days, T₅ (40% papaya + 60% guava) exhibited the highest ascorbic acid content (148.36 mg/100 g), followed by T₄ (50:50) with 127.32 mg/100 g. The lowest value was recorded in the control (T₁, 100% papaya) at 56.32 mg/100 g.

After 30 days of storage, T₅ again had the highest ascorbic acid (138.42 mg/100 g), comparable to T₄ (116.29 mg/100 g), while T₁ showed the minimum content (51.42 mg/100 g). At 60 days, the ascorbic acid content declined slightly, with T₅ recording 126.52 mg/100 g and T₄ 107.32 mg/100 g. The control maintained the lowest value (45.15 mg/100 g).

The results indicate that increasing the proportion of guava pulp in the blend significantly enhances the ascorbic acid content compared to 100% papaya pulp, consistent with Kumar *et al.* (2010) [17]. A gradual decline in ascorbic acid during storage was observed, likely due to oxidation to dehydroascorbic acid, further degradation to 2, 3-diketogluconic acid, and eventual formation of furfural compounds, which contribute to browning reactions (Sharma *et al.*, 2013) [15]. These findings align with previous reports on guava nectar (Karanjalkar *et al.*, 2013) [14].

Total Carotenoids (µg/100 g)

Significant differences were observed in total carotenoid content among papaya-guava fruit bar treatments at 0, 30, and 60 days of storage (Fig 3). At 0 days, the highest carotenoids were recorded in T₁ (100% papaya) at 1594 µg/100 g, followed by T₂ (80% papaya + 20% guava, 1525 µg/100 g), T₃ (60:40, 1344 µg/100 g), and T₄ (50:50, 1218 µg/100 g). The lowest content was observed in T₅ (40% papaya + 60% guava, 974 µg/100 g).

After 30 days, T₁ retained the highest carotenoids (1536 µg/100 g), followed by T₂ (1428 µg/100 g), while T₅ recorded the lowest (794 µg/100 g). At 60 days, a similar trend was observed, with T₁ at 1386 µg/100 g, T₂ at 1273 µg/100 g, and T₅ the lowest at 643 µg/100 g.

The total carotenoids content increased with higher proportions of papaya pulp, reflecting the naturally rich carotenoid content of papaya (Take *et al.*, 2012) [13]. The decline in carotenoids during storage may be attributed to non-oxidative changes, such as cis-trans isomerization and epoxide formation, as well as oxidative degradation (Guarte *et al.*, 2005) [8]. These results are consistent with previous observations in papaya toffee and leather (Attri *et al.*, 2014) [4].

Protein (%)

Significant differences in protein content were observed among papaya-guava fruit bar treatments at 0, 30, and 60 days of storage (Fig 3). At 0 days, T₅ (40% papaya + 60% guava) showed the highest protein content (1.02%), comparable to T₄ (50:50, 1.00%) and T₃ (60:40, 0.95%). The lowest protein content was recorded in T₁ (100% papaya, 0.86%).

At 30 days, T₅ again exhibited the highest protein (0.87%), statistically similar to T₄ (0.83%) and T₃ (0.83%), whereas T₁ recorded the minimum value (0.74%). After 60 days, T₅ retained the highest protein (0.73%), followed by T₄ (0.71%) and T₃ (0.66%). The lowest protein content was observed in T₁ (0.63%) and T₂ (0.64%), which were statistically similar.

The increase in protein content with higher proportions of guava pulp reflects the naturally higher protein levels in guava compared to papaya (Ashaye *et al.*, 2005) [5]. A gradual decline in protein content was observed during storage, likely due to protein participation in Maillard reactions (Anju *et al.*, 2014) [1]. These findings are consistent with previous reports on plum-soy products (Sharma Mala, 1997) [29].

Colour and Appearance

Colour and appearance of papaya-guava (L) fruit bars were evaluated using a 9-point hedonic scale and showed significant differences among treatments at 0, 30, and 60 days of storage (Table 1). Scores ranged from 7.96 (T₅ and T₃) to 8.85 (T₄) and remained within the acceptable range.

At 0 days, the highest colour score (8.85) was recorded for T₄ (50% papaya + 50% guava), followed by T₁ (100% papaya, 8.70) and T₂ (80% papaya + 20% guava, 8.49), which were statistically comparable. The lowest score (8.25) was observed in T₅ (40% papaya + 60% guava). After 30 days, T₄ again received the highest score (8.75), comparable with T₁ (8.60), while T₅ recorded the lowest score (8.15).

The superior colour in T₄ may result from the combined effect of carotenoids in papaya and lycopene pigments in guava (Vishwasrao & Ananthanarayan, 2016) [35]. The gradual decline in colour scores over storage could be attributed to Maillard reactions, enzymatic browning, and polymerization of anthocyanins with phenolic compounds (Garcia *et al.*, 1999) [7]. These observations are consistent with earlier reports on guava leather (Safdar *et al.*, 2014) [26].

Texture

Texture scores of papaya-guava (L) fruit bars showed no significant differences among treatments at 0, 30, and 60 days of storage, ranging from 8.05 to 8.65 on a 9-point hedonic scale (Table 1).

At 0 days, the highest texture score (8.65) was observed in T₄ (50% papaya + 50% guava), followed by T₅ (40% papaya + 60% guava, 8.50). The lowest score was recorded in T₁ (100% papaya, 8.25). At 30 days, T₄ again received the highest score (8.55), while T₁ had the lowest (8.10). A similar trend persisted at 60 days, with T₄ maintaining the highest texture score (8.45), followed by T₅ (8.20) and T₃ (60% papaya + 40% guava, 8.06). The lowest score at this stage was recorded in T₁ (8.05).

A gradual decline in texture scores during storage was observed, possibly due to moisture absorption by the fruit bars (Parekh *et al.*, 2014) [24]. These results align with

previous findings in papaya toffee and papaya leather (Attri *et al.*, 2014) [4].

Flavour

Flavour of papaya-guava (L) fruit bars was evaluated using a 9-point hedonic scale and showed no significant differences among treatments at 0, 30, and 60 days of storage (Table 1). Scores ranged from 8.03 to 8.60 and remained within the acceptable range.

At 0 days, the highest flavour score (8.60) was recorded for T₄ (50% papaya + 50% guava), followed by T₃ (60% papaya + 40% guava, 8.45), T₂ (80% papaya + 20% guava, 8.36), and T₅ (40% papaya + 60% guava, 8.32). The lowest score was observed in T₁ (100% papaya, 8.24). At 30 days, T₄ again scored highest (8.55), while T₁ received the lowest score (8.14). After 60 days, the highest flavour score was maintained in T₄ (8.50), followed by T₅ (8.12), T₂ (8.09), T₃ (8.05), and T₁ (8.03).

A gradual decline in flavour scores during storage was observed, likely due to the loss of volatile aromatic compounds over time (Kaushal *et al.*, 2013) [15]. These findings are consistent with previous reports on papaya leather (Attri *et al.*, 2014) [4].

Taste

Taste of papaya-guava (L) fruit bars was evaluated on a 9-point hedonic scale and showed no significant differences among treatments at 0, 30, and 60 days of storage (Table 1). Scores ranged from 7.95 to 8.60, remaining within the acceptable range.

At 0 days, the highest taste score (8.60) was observed in T₄ (50% papaya + 50% guava), followed by T₂ (80% papaya + 20% guava, 8.50). The lowest score (8.30) was recorded in T₃ (60% papaya + 40% guava). After 60 days, T₄ again recorded the highest score (8.45), followed by T₂ (8.06) and T₁ (100% papaya, 8.05). The lowest taste score at 60 days was noted in T₅ (40% papaya + 60% guava, 7.95).

A gradual decline in taste scores during storage was observed, likely due to variations in acidity, pH, and the sugar-acid ratio (Safdar *et al.*, 2014) [26]. These findings are consistent with reports on fortified mango bars (Parekh *et al.*, 2014) [24].

Overall Acceptability

Overall acceptability of papaya-guava (L) fruit bars was assessed using a 9-point hedonic scale, and the effects of different treatments during storage are presented in Table 1. Significant differences among treatments were observed at 60 days of storage, while scores at 0 and 30 days were not significantly different.

At 0 and 30 days, the highest overall acceptability scores were recorded in T₄ (50% papaya + 50% guava), with values of 8.67 and 8.58, respectively. The lowest scores at these intervals were observed in T₃ (60% papaya + 40% guava), with 8.32 at 0 days and 8.17 at 30 days. After 60 days, T₄ continued to show the highest acceptability (8.50), followed by T₂ (80% papaya + 20% guava, 8.11), while the lowest score (8.01) was recorded for T₃.

Overall acceptability declined gradually over the storage period across all treatments, likely due to changes in product composition and loss of colour and flavour (Parekh *et al.*, 2014) [24]. Among all blends, the 50:50 papaya-guava ratio (T₄) demonstrated the highest consumer preference. These results align with previous reports on papaya toffee and

leather (Attri *et al.*, 2014) ^[4] and guava jelly bars (Kuchi *et al.*, 2014) ^[16].

Microbial Count (cfu/g)

The microbial quality of papaya-guava fruit bars prepared with different blending ratios was evaluated at 0, 30, and 60 days of storage, and the results are presented in Table 1. At zero days, all treatments, including the control, were free from yeast and mould contamination. Among the treatments, the fruit bar prepared with 100% papaya pulp (T₁) showed the highest yeast and mould counts at 30 days (0.4×10^2 cfu/g) and 60 days (0.6×10^2 cfu/g) of storage,

whereas other blends exhibited lower microbial growth.

Fruit bars with moisture content in the range of 13-25% have water activity below 0.8, which restricts the growth of most bacteria and other microorganisms (Jay *et al.*, 2005) ^[12]. The yeast and mould counts observed in all treatments after 30 and 60 days were negligible and within safe limits recommended by the World Health Organization (WHO), which suggests a total microbial count below 1×10^4 cfu/g (WHO, 1994) ^[36].

These results indicate that fruit bars prepared from various papaya-guava pulp blends were microbiologically stable and safe for consumption throughout the storage period.

Table 1: Influence of different blending ratios of papaya guava fruit bar on overall acceptability score and microbial count (cfu/ g) at different days of storage

Treatments	Overall acceptability score			Microbial count (yeast and mould) (cfu/g)		
	Days after storage			Days after storage		
	0	30	60	0	30	60
T ₁	8.39	8.27	8.03	0	0.4×10^2	0.6×10^2
T ₂	8.43	8.29	8.11	0	0.2×10^1	0.3×10^1
T ₃	8.32	8.17	8.01	0	0.2×10^2	0.4×10^2
T ₄	8.67	8.58	8.50	0	0.1×10^1	0.2×10^1
T ₅	8.35	8.21	8.05	0	0.3×10^2	0.5×10^2
S. Em. $\pm$	0.12	0.12	0.12	NA	NA	NA
CD @ 5%	NS	NS	0.34	NA	NA	NA

NS: Non-significant; NA: Not applicable, T₁: (100% Papaya pulp), T₂: (80% Papaya pulp + 20% Guava pulp), T₃: (60% Papaya pulp + 40% Guava pulp), T₄: (50% Papaya pulp + 50% Guava pulp), T₅: (40% Papaya pulp + 60% Guava pulp).

Note: Papaya cv. Red Lady) and Guava cv. Lalit

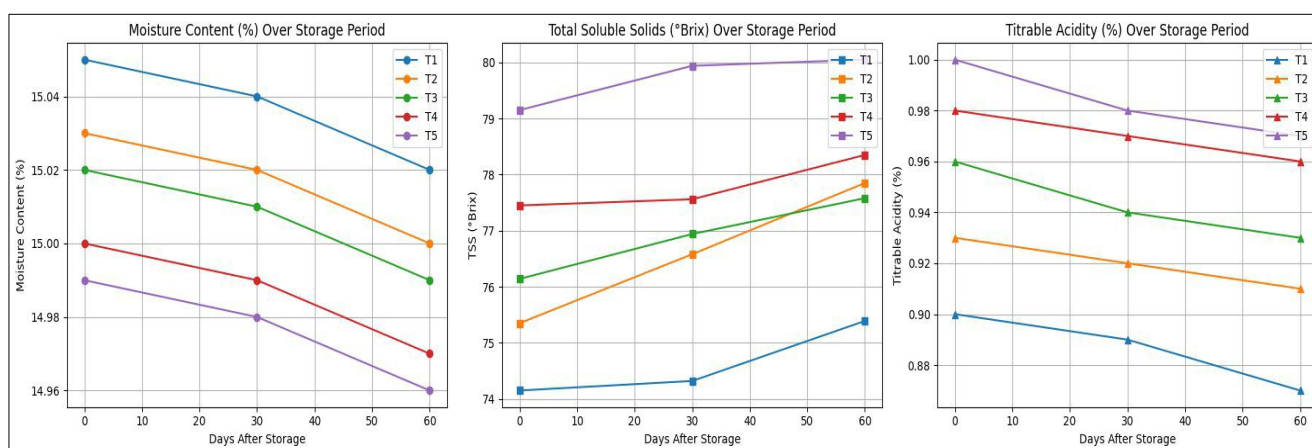


Fig 1: Effect of blending ratios on Moisture, Total Soluble Solids and Titrable Acidity of papaya-guava fruit bars during storage

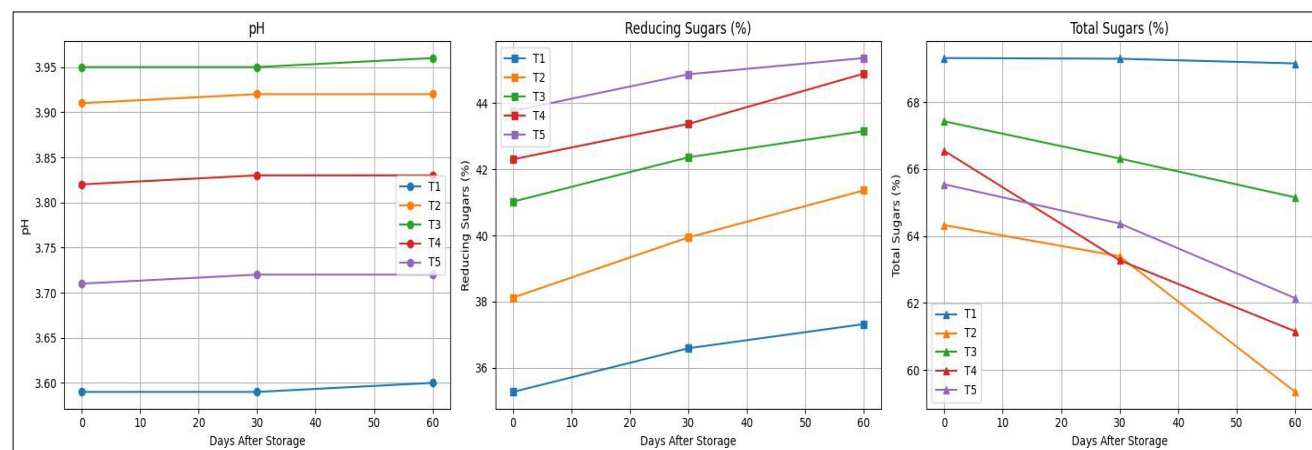
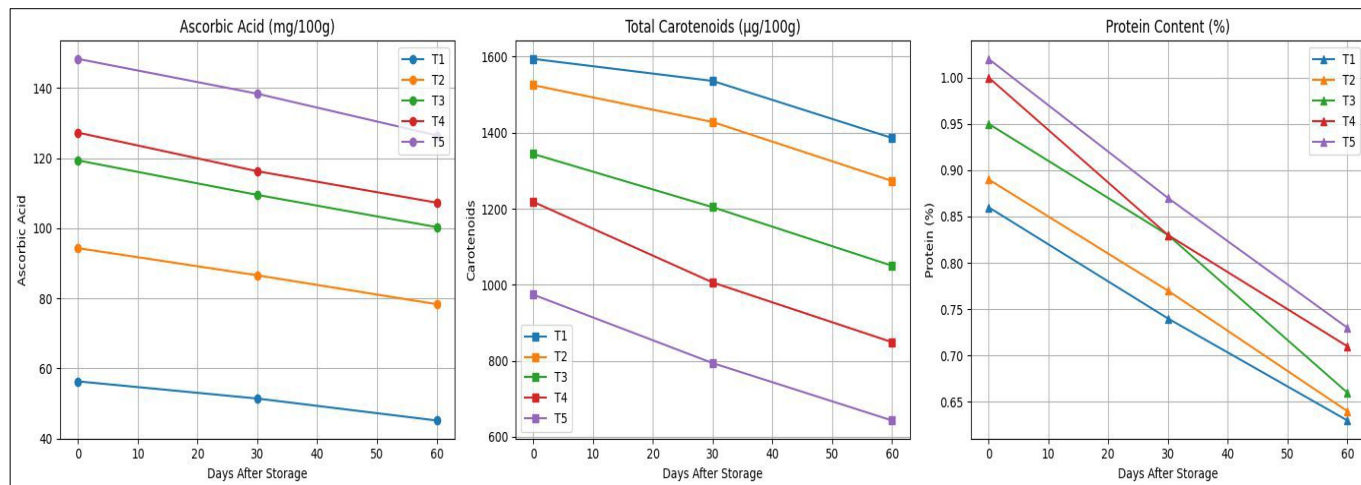


Fig 2: Effect of blending ratios on pH, reducing sugars, and total sugars of papaya-guava fruit bars during storage



Note (common for Figures 1, 2, and 3):

T₁: 100% Papaya pulp

T₂: 80% Papaya pulp + 20% Guava pulp

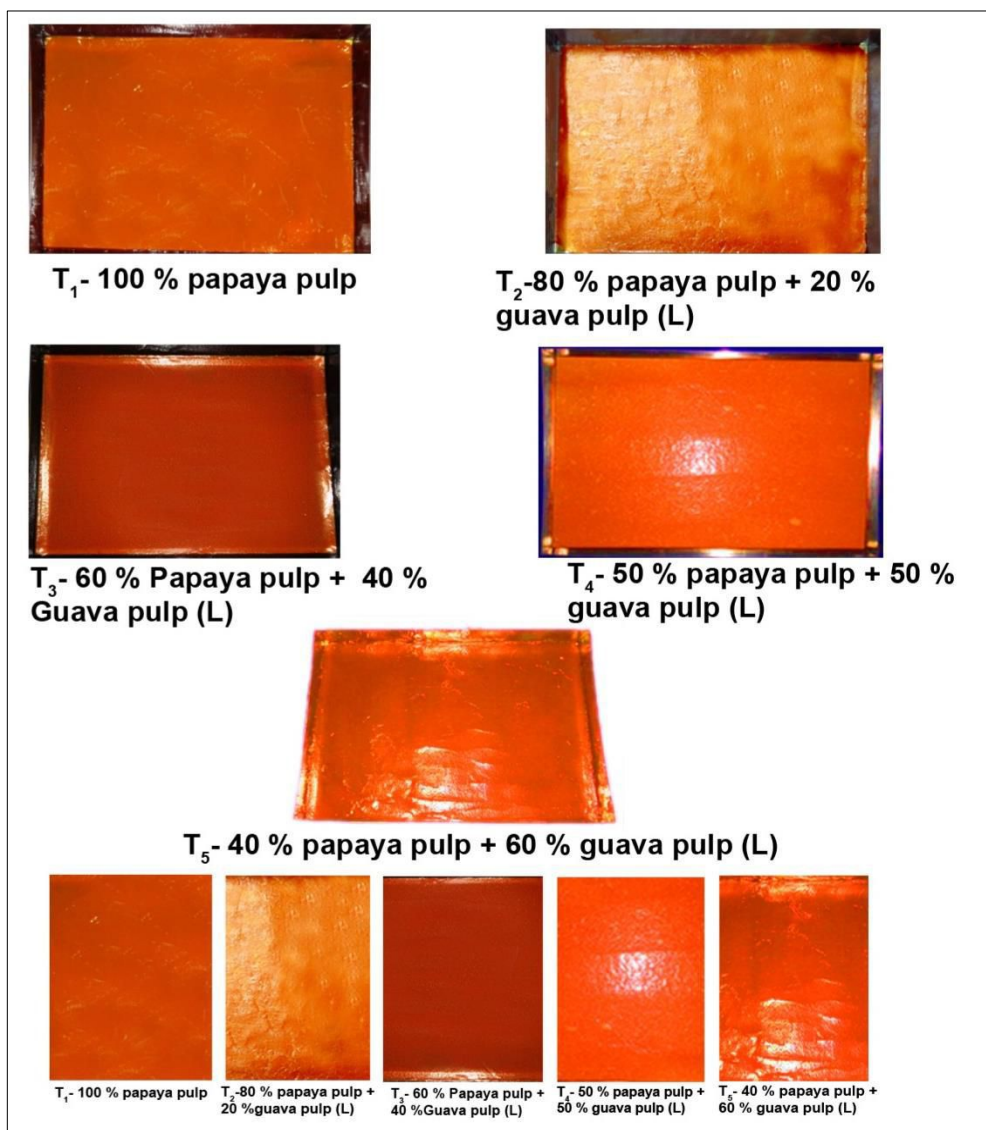
T₃: 60% Papaya pulp + 40% Guava pulp

T₄: 50% Papaya pulp + 50% Guava pulp

T₅: 40% Papaya pulp + 60% Guava pulp

(Papaya cv. Red Lady and Guava cv. Lalit blended bar)

Fig 3: Changes in Nutritional Parameters During Storage of papaya guava leather



Note: Papaya cv. Red Lady and Guava cv. Lalit blender bar

Plate: Different treatments representing various blending ratios of papaya-guava (L) fruit bar

Conclusion

Based on sensory evaluation and nutritional analysis, the papaya-guava (Lalit) fruit bar prepared with 50% papaya pulp and 50% guava pulp (T₄) was identified as the optimal blend. This treatment exhibited the highest scores for overall acceptability, including colour (8.85), texture (8.65), flavour (8.60), and taste (8.60). In addition, T₄ demonstrated superior nutritional quality, with elevated levels of ascorbic acid (127 mg/100 g), total carotenoids (1218 µg/100 g), and protein content (1.00%), indicating that an equal blending ratio of papaya and guava pulp produces a fruit bar with the best combination of sensory appeal and nutritional value.

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