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E Vaishnavi

Department of Plantation,
Spices Medicinal and Aromatic
crops, College of Horticulture
SKLTSHU, Rajendranagar,
Hyderabad, Telangana, India

Dr. M Padma

Professor, Dean of PG Studies,
Department of Horticulture,
SKLTSHU, Mulugu, Telangana,
India

Dr. Veena Joshi

Assistant Professor, Department
of Horticulture, College of
Horticulture, Mojerla,
Wanaparthy, Telangana, India

Dr. R Purnima Mishra

Technical officer, Department of
Agricultural Engineering, College
of Horticulture, SKLTSHU,
Rajendranagar, Hyderabad,
Telangana, India

Corresponding Author:**E Vaishnavi**

Department of Plantation,
Spices Medicinal and Aromatic
crops, College of Horticulture
SKLTSHU, Rajendranagar,
Hyderabad, Telangana, India

Development and standardization of aloe vera jam with fruit flavours and nutritional, organoleptic evaluation

E Vaishnavi, Dr. M Padma, Dr. Veena Joshi and Dr. R Purnima Mishra

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Abstract

The present research entitled "Development and Standardization of *Aloe vera* jam with fruit flavours and nutritional, organoleptic evaluation" was carried out at Post Harvest Technology Laboratory, College of Horticulture, Rajendranagar, Hyderabad during June 2019 to October 2019. The experiment was laid in factorial completely randomized block design with three replications.

The experiment results revealed that, Highest reducing sugars (20.4%) were recorded in T6 (*Aloe vera* 40% + guava 60%) (20.4%), non-reducing sugars (12.5%), total sugars (32.9%). The highest colour appearance (8.4) were recorded the treatment *Aloe vera* 40% + guava 60% (T6), aroma (8.7), taste (8.7) and overall acceptability (8.8) on a 9 point Hedonic Rating Scale.

No detectable mould count and bacterial count and negligible total viable count were observed in all the above treatments during 4 months of storage period of 2nd experiment.

Keywords: *Aloe vera*, guava, pine apple, mango, reducing sugars, non-reducing sugars, total sugars, mould count, bacterial count

Introduction

The herb *Aloe vera* is as old as human civilization. It belongs to the family "Liliaceae". The genus is found in Tropical and Southern Africa and Arabica. It was introduced into other parts of the world for ornamental purposes (Reynolds, 1985) [14]. *Aloe* was known to Indians for its medicinal value since time immemorial in the name of Ghrit Kumaree or Kanyasara.

Several species of the genus *aloe* have been in use under the common name of *aloe* Viz., *Aloe vera*, *Aloe barbadensis*, *Aloe ferox*, *Aloe chinensis*, *Aloe indica* etc. Among these, *Aloe vera* Linn Syn. *Aloe barbadensis* Miller are accepted unanimously as the correct botanical source of *aloe*. In most of the references, *Aloe barbadensis* Miller is regarded as the correct name. The *aloe* is known as "Mussambar" in Indian market (Saroj *et al.*, 2004) [15].

It is used in the food products like refreshing juice, ready-to-serve drinks, health drinks, sports drinks, diet drinks, soft drinks, laxative drinks etc. The flesh portion can also be converted into candies, squash, jam, bar, munch etc. Additionally, it can be incorporated into dairy products eg.

Yogurt, curd, lassi, ice creams etc. The gel can be dried using suitable drying techniques and the dried powder can be used in the development of various products.

Keeping in view of the above information, the present investigation was planned to development and standardization of *Aloe vera* jam with fruit flavours and nutritional and organoleptic evaluation.

Materials and Methods

The present investigation entitled "Development and standardization of *Aloe vera* jam with fruit flavours and nutritional and organoleptic evaluation" was carried out at Post Harvest Technology Laboratory, College of Horticulture, Rajendranagar, Hyderabad. The experiment was laid out in Factorial Completely Randomized Block Design replicated thrice.

Aloe vera leaves utilized in this experiment were obtained from Medicinal and Aromatic Plants Research Station, Rajendranagar, Hyderabad. Healthy leaves were collected manually during June 2019.

Leaves with injuries and damages were discarded. The leaves which are mature for 9 months and healthy are used for carrying out the experiments.

Preparation of *Aloe vera* juice

The lower 1 inch of the leaf base, the tapering point (2-4inch) of the leaf top and the short, sharp spines located along the leaf margins were removed with a sharp knife and then, the knife was introduced into the mucilage layer below the green rind, avoiding the vascular bundles, and the top rind was removed. The bottom rind was also similarly removed and the rind parts, to which a significant amount of mucilage remained attached was discarded. The filleting process was completed within 24 hours of harvesting the leaves. The pulp was heated to 60-65 °C for 10 min. The extracted pulp was thoroughly homogenized with a blending machine for 15 minutes. The mashed pulp was strained with muslin cloth to retrieve the *Aloe vera* juice which was stored under refrigerated conditions for preparation of treatments.

Extraction of fruit pulp

Fruits used in the experiment were washed thoroughly twice

with clean water. The outer skins were peeled with a sharp knife in case of mango, sweet orange and pineapple and were cut into small pieces. These small pieces were thoroughly homogenized in a blending machine for 10 minutes. The homogenized fruit pulp was filtered to remove any foreign material.

Preparation of aloe vera jam with fruit flavours

Blending of fruit pulp with *Aloe vera* juice was prepared as per treatments. The sugar and citric acid were added to this blend. Thereafter, blend was heated till 68.5°Brix TSS was arrived. To this blend Chemical preservative was added to this blend as per the requirement of the treatments. The bottles used for filling were prepared by thorough washing and sterilization. Further the prepared jam with different treatments was filled into the bottles upto the neck portion leaving a small gap. The filled in bottles were capped with bottle corks and sterilized up to 30 minutes. The treated bottles were rested for cooling of the product. After cooling of the product, treatments with replications were kept for storage studies at room temperature and refrigerator.

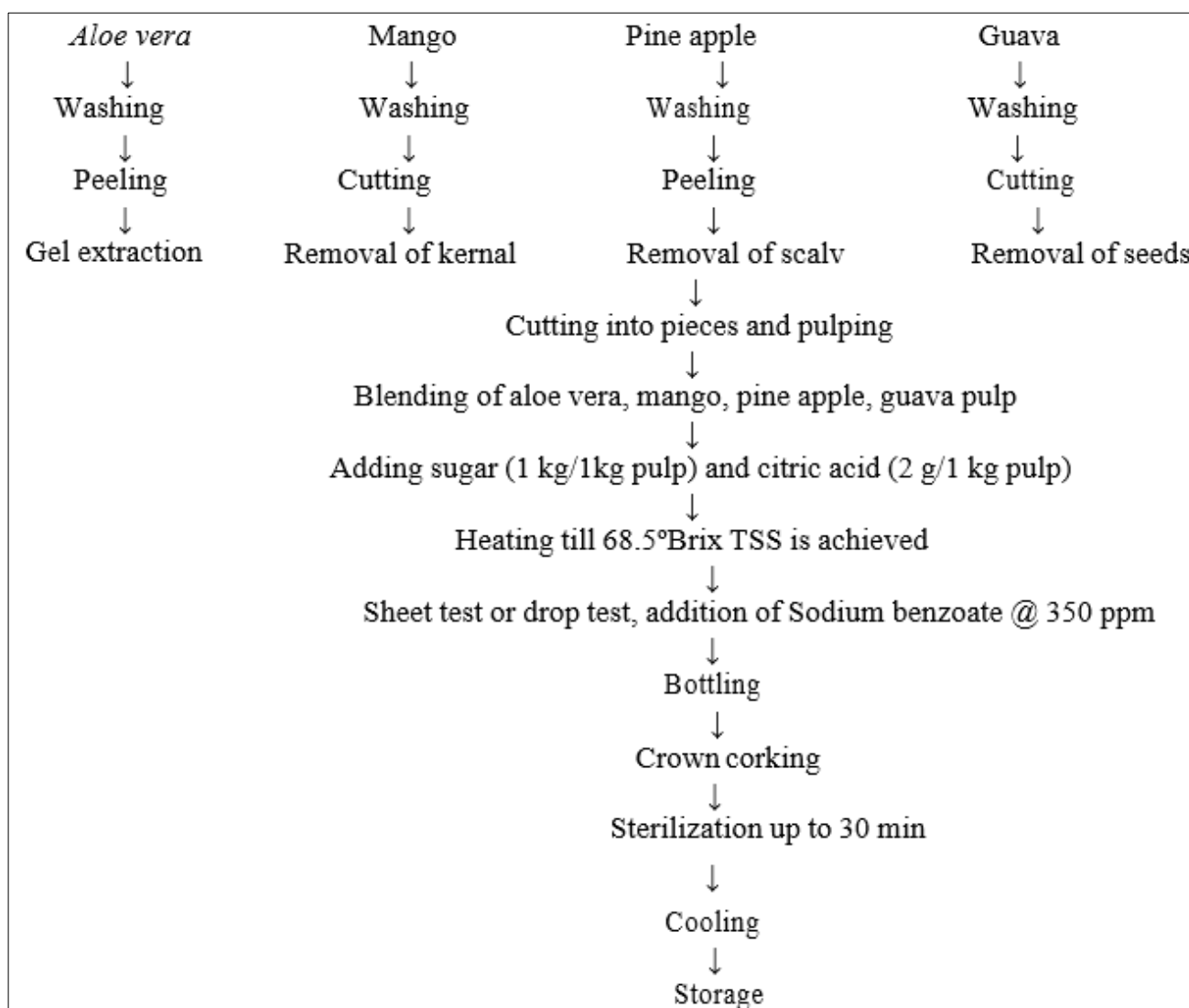


Fig 1: Preparation of *Aloe vera* jam with fruit flavours flow chart

Experimental details Factor I: Treatments

T1: *Aloe vera* 60% + Mango 40% T2: *Aloe vera* 50% + Mango 50% T3: *Aloe vera* 40% + Mango 60% T4: *Aloe vera* 60% + Guava 40% T5: *Aloe vera* 50% + Guava 50% T6: *Aloe vera*

40% + Guava 60% T7: *Aloe vera* 60% + Pineapple 40% T8: *Aloe vera* 50% + Pineapple 50% T9: *Aloe vera* 40% + Pineapple 60% T10: *Aloe vera* 100%

* Note: Sugar 1000g/kg of *Aloe vera* jam, Pectin 50g/kg of *Aloe vera* jam, Citric acid 25ml/kg of *Aloe vera* jam and KMS 350ppm were added to all the treatments.

Factor II

Storage conditions

1. Ambient storage conditions.
2. Cool storage conditions

Number of Replications : 3

Number of Treatments : 20

Sample size : 5 (in each treatment)

Storage: *Aloe vera* jam products are stored at ambient temperature (25 °C) and cool temperature (7-10 °C) for 4 months period. The data were recorded at 15 days of interval.

Proximate nutrient composition parameters

Reducing Sugars (%)

For estimating reducing sugars, the sample size of 10 ml was taken and analyzed by using the procedure as outlined by Lane and Eynon method (Ranganna 1977) [13]. Sample of 10 ml was blended with distilled water and neutralized with 0.1 N NaOH after adding lead acetate for clarification. Potassium Oxalate was added to remove excess of lead and volume was made up to 250 ml with distilled water and filtered. Filtrate of 20 ml was further diluted to 100 ml and used for analysis and expressed as per cent.

Total sugars (%)

For estimating total sugars, 10 ml of sample was taken and analyzed by using the procedure as outlined by Lane and Eynon method (Ranganna 1977) [13]. For estimation of total sugars, 50ml of the filtrate was hydrolyzed with 5ml of concentrated hydrochloric acid at room temperature for a day and there after neutralizing with NaOH using phenolphthalein indicator. The volume was made up to 100ml with distilled water and this aliquot was used for estimation of total sugars. Total sugars were expressed as per cent.

Non-Reducing Sugars (%)

For estimating non-reducing sugars, sample size of 10 ml was taken and analyzed by using the procedure as outlined by Lane and Eynon method (Ranganna 1977) [13].

Non-Reducing sugars were estimated by the estimation of total sugars and reducing sugars and expressed as per cent. Non-Reducing Sugars were calculated by using the following formula:

Non-Reducing Sugars (%) = Total Sugars (%) – Reducing Sugars (%)

Organoleptic evaluation: Organoleptic characters

The organoleptic evaluation for assessing the sensory of samples were conducted by a panel of 5 judges and the samples were rated on a 9 point Hedonic Rating Scale (Amerine *et al.*, 1965) [1] as mentioned below:

Organoleptic score	Rating
Like extremely (LE)	9
Like very much (LVM)	8
Like moderately (LM)	7
Like slightly (LS)	6
Neither like nor dis like (NLND)	5
Dislike slightly (DS)	4
Dislike moderately (DM)	3
Dislike very much (DVM)	2
Dislike extremely (DE)	1

Statistical analysis

The data recorded on various parameters in different experiments were subjected to statistical analysis. The experiments were designed under Completely Randomized Block design with a factorial concept. Observations were recorded with three replications and the data were analyzed with 5% level of significance.

Results and Discussion

Proximate nutrient composition

1. Reducing Sugars (%)

The data recorded on reducing sugars of *Aloe vera* jam with fruit flavours presented in table 1 and depicted in Fig 2. The treatment (T6) *Aloe vera* 40% + guava 60% recorded the highest reducing sugars (20.4%). Among the different storage conditions, cool storage condition (S2) recorded the highest reducing sugars (18.4%). Among the interactions effects, the treatment *Aloe vera* 50% + pine apple 50% at cool storage condition (T8S2) recorded the highest reducing sugars (24.6%).

Reducing sugars in *Aloe vera* jam followed an increasing trend during storage. This could be due to the inversion of non-reducing sugars that are being converted to reducing sugars caused by hydrolysis. Corroborative findings to the present study reported by Talmiz Ur Rahaman *et al.*, (2018) [17] where maximum mean value observed in (T0) (23.55%) with maximum percentage increase found in (T0) (42.62%) during 90 days of storage; Madhuri Dahiwalé *et al.*, (2017) [10] reported maximum mean value of reducing sugars observed in (14.0%) guava 40% + carrot 60% + tulasi 5ml (T4) stored at ambient condition.

2. Total sugars (%)

The data recorded on reducing sugars of *Aloe vera* jam with fruit flavours presented in table 2 and depicted in Fig 3. The treatment (T6) *Aloe vera* 40% + guava 60% recorded the highest total sugars (32.9%). Among the different storage conditions, cool storage condition (S2) recorded the highest total sugars (30.1%). Among the interactions effects, the treatment *Aloe vera* 50% + pine apple 50% at cool storage condition (T8S2) recorded the highest total sugars (35.7%).

Total sugar content in all the treatments increased with increase in storage period. The increase in sugar content with the passage of time might be due to conversion of starch and other carbohydrates into sugars. Corroborative findings to the present study reported by Patel *et al.*, (2015) [12] where highest total sugar increase from (52.81% to 54.88%) reported in (T3) banana 75% + pine apple 25% at ambient storage condition from 0 to 9 months of storage respectively.

3. Non-reducing sugars (%)

The data recorded on reducing sugars of *Aloe vera* jam with fruit flavours presented in table 3 and depicted in Fig 4. The treatment (T6) *Aloe vera* 40% + guava 60% recorded the highest non-reducing sugars (12.5%). Among the different storage conditions, Ambient storage condition (S1) recorded the highest non-reducing sugars (11.6%). Among the interactions effects, the treatment *Aloe vera* 40% + pine apple 60% at ambient storage condition (T9S1) recorded the highest non-reducing sugars (13.0%). Non-reducing sugars in *Aloe vera* jam followed an increasing trend during storage. Corroborative findings to the present study reported by Patel *et al.*, (2015) [12] where the highest non reducing sugars reported in (T4) 100% banana + 0% pine apple (18.53%) and gradually increased with respect of storage period.

Organoleptic evaluation

4. Colour appearance

The data recorded on colour appearance of *Aloe vera* jam with fruit flavours presented in table 4 and depicted in Fig 5. The treatment *Aloe vera* 40% + guava 60% (T6) recorded the highest colour appearance (8.4). Among the different storage conditions, cool storage condition (S2) recorded the highest colour appearance (7.8). Among the interactions effects, the treatment *Aloe vera* 40% + guava 60% at cool storage condition (T6S2) recorded the highest colour appearance (8.7).

The colour appearance mean score was highest on the day of preparation of the product. Considerable decrease was noticed in all the treatments at all the intervals of storage. Corroborative findings reported by Talmiz Ur Rahaman *et al.*, (2018) [17] where sensory panelist scores for colour of guava jam decreased gradually ($p < 0.05$) during the storage time. The maximum mean value for colour (6.94) was observed in (T6) 50% guava + 50% sugar + 1.2% pectin.

5. Aroma

The data recorded on aroma of *Aloe vera* jam with fruit flavours presented in table 5 and depicted in Fig 6. The treatment *Aloe vera* 40% + guava 60% (T6) recorded the highest aroma (8.7). Among the different storage conditions, cool storage condition (S2) recorded the highest aroma (8.2). Among the interactions effects, the treatment *Aloe vera* 40% + guava 60% at cool storage condition (T6S2) recorded the highest aroma (8.9).

The aroma mean score was highest on the first day of preparation. All the treatments and all the intervals of storage showed decreased trend of aroma scoring. Decrease in flavour upon storage may be due to loss of volatile aromatic substances responsible for flavour. Similar findings reported by Talmiz Ur Rahaman *et al.*, (2018) [17] reported that sensory panelist scores for texture of guava jam decreased gradually ($p < 0.05$) during the storage. The maximum score for aroma (6.94) upto 9 was recorded in (T6) 50% guava + 50% sugar + 1.2% pectin stored at ambient condition.

6. Taste

The data recorded on taste of *Aloe vera* jam with fruit flavours presented in table 6 and depicted in Fig 7. The treatment *Aloe vera* 40% + guava 60% (T6) recorded the highest taste (8.7). Among the different storage conditions, cool storage condition (S2) recorded the highest taste (8.3). Among the interactions effects, the treatment *Aloe vera* 40% + guava 60% at cool storage condition (T6S2) recorded the highest taste (8.8).

The taste mean score was highest on the first day of preparation of the product. All the treatments and in all the intervals of storage showed decreased trend of taste scoring. Decrease in flavour and taste upon storage may be due to loss of volatile aromatic substances responsible for flavour. Temperature is also plays important role on the biochemical changes in the products. Corroborative findings reported by Shafaly Sharma *et al.*, (2019) [16] where highest score for taste (8.30) out of 9 recorded in (T2) bale 0% + mango 100% stored at ambient condition.

7. Overall acceptability

The data recorded on taste of *Aloe vera* jam with fruit flavours presented in table 7 and depicted in Fig 8 The treatment *Aloe vera* 40% + guava 60% (T6) recorded the highest overall acceptability (8.8). Among the different storage conditions, cool storage condition (S2) recorded the highest overall acceptability (8.4). Among the interactions effects, the treatment *Aloe vera* 40% + guava 60% at cool storage condition (T6S2) recorded the highest overall acceptability (8.9).

The overall acceptability of *Aloe vera* jam decreased gradually during storage period. Similar findings reported by Shafaly Sharma *et al.*, (2019) [16] and recorded the highest score for overall acceptability (8.34) out of 9 recorded in (T2) bale 0% + mango 100%. Similarly Olugbenga Olufemi Awolu *et al.*, (2018) [11] recorded the highest score for overall acceptability (5.70) out of 9 in Banana: Watermelon: Pineapple (BWP-3) of 25: 25: 50.

Table 1: Development and Standardization of *Aloe vera* jam with fruit flavours and evaluation of storage stability on Reducing sugars (%)

	Reducing sugars (%)																													
	Day 1			15th Day			30th Day			45th Day			60th Day			75th Day			90th Day			105th Day			120th Day					
	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean			
T1	12.7	19.4	16.0 i	12.6	19.4	16.0 i	13.6	20.4	17.0 i	13.6	20.4	17.0 i	14.6	21.3	17.9 i	14.6	21.4	18.0 i	15.5	22.3	18.9 i	15.6	22.4	19.0 i	16.6	23.3	19.9 i			
T2	16.5	8.3	12.4 d	16.5	8.2	12.4 d	17.5	9.2	13.3 d	17.5	9.2	13.4 d	18.4	10.1	14.3 d	18.5	10.2	14.3 d	19.4	11.1	15.3 d	19.5	11.2	15.3 d	20.4	12.1	16.3 d			
T3	7.1	20.7	13.9 e	7.0	20.7	13.8 e	8.0	21.6	14.8 e	8.0	21.7	14.9 e	8.9	22.6	15.8 e	9.0	22.6	15.8 e	9.9	23.6	16.8 e	10.0	23.7	16.9 e	11.0	24.6	17.8 e			
T4	6.9	12.2	9.55 a	6.8	12.1	9.54 a	7.8	13.1	10.4 a	7.8	13.1	10.5 a	7.8	14.1	10.9 a	7.8	14.1	11.0 a	8.8	15.1	11.9 a	8.8	15.1	12.0 a	9.8	16.1	12.9 a			
T5	11.6	9.6	10.6 b	11.6	9.6	10.6 b	12.5	10.5	11.5 b	12.6	10.6	11.6 b	13.6	11.5	12.5 b	13.6	11.6	12.6 b	14.5	12.5	13.5 b	14.6	12.6	13.6 b	15.6	13.5	14.5 b			
T6	12.7	20.3	16.5 j	12.6	20.2	16.4 j	13.6	21.2	17.4 j	13.6	21.2	17.4 j	14.6	22.2	18.4 j	14.6	22.2	18.4 j	15.6	23.2	19.4 j	15.6	23.2	19.4 j	16.6	24.2	20.4 j			
T7	17.2	10.8	14.0 f	17.1	10.7	13.9 f	18.1	11.7	14.9 f	18.1	11.7	14.9 f	19.1	12.6	15.8 f	19.1	12.7	15.9 f	20.1	13.6	16.8 f	20.1	13.7	16.9 f	21.1	14.6	17.8 f			
T8	10.6	20.7	15.7 h	10.6	20.7	15.6 h	11.5	21.6	16.6 h	11.6	21.7	16.6 h	12.5	22.6	17.6 h	12.6	22.7	17.6 h	13.5	23.6	18.6 h	13.6	23.7	18.6 h	14.5	24.6	19.6 h			
T9	11.3	12.9	12.1 c	11.3	12.9	12.1 c	12.2	13.8	13.0 c	12.3	13.8	13.1 c	13.3	14.8	14.1 c	13.3	14.8	14.0 c	14.2	16.1	15.2 c	14.3	15.8	15.0 c	15.2	16.8	16.0 c			
T10	18.6	10.4	14.5 g	18.6	10.3	14.5 g	19.5	11.3	15.4 g	19.6	11.3	15.4 g	20.5	12.2	16.4 g	20.5	12.3	16.4 g	21.5	13.2	17.4 g	21.6	13.3	17.4 g	22.5	14.2	18.4 g			
Mean	12.5A	14.5B		12.5A	14.5B		13.4A	15.4B		13.5A	15.5B		14.3A	16.4B		14.4A	16.4B		15.3A	17.4B		15.4A	17.4B		16.3A	18.4B				
T	S	TxS		T	S	TxS		T	S	TxS		T	S	TxS		T	S	TxS		T	S	TxS		T	S	TxS		T	S	TxS
F test	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
S.Em±	0.022	0.010	0.031	0.012	0.006	0.018	0.019	0.008	0.027	0.018	0.008	0.025	0.018	0.008	0.026	0.018	0.008	0.025	0.056	0.025	0.079	0.017	0.008	0.024	0.017	0.008	0.024			
CD at 5%	0.063	0.028	0.089	0.036	0.016	0.051	0.054	0.024	0.077	0.050	0.023	0.071	0.052	0.023	0.073	0.050	0.023	0.071	0.159	0.071	0.225	0.049	0.022	0.069	0.048	0.022	0.068			

S1- ambient storage, S2- cool storage

T1-*Aloe vera* 60% + mango 40%, T2-*Aloe vera* 50% + mango 50%, T3-*Aloe vera* 40% + mango 60%, T4-*Aloe vera* 60% + guava 40%, T5-*Aloe vera* 50% + guava 50%, T6-*Aloe vera* 40% + guava 60%, T7-*Aloe vera* 60% + pine apple 40%, T8-*Aloe vera* 50% + pine apple 50%, T9-*Aloe vera* 40% + pine apple 60%, T10- *Aloe vera* 100%.

Table 2: Development and Standardization of *Aloe vera* jam with fruit flavours and evaluation of storage stability on Total sugars (%)

	Total sugars (%)																										
	Day 1			15th Day			30th Day			45th Day			60th Day			75th Day			90th Day			105th Day			120th Day		
	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean
T1	20.5	27.2	23.9 i	20.6	27.3	23.9 h	22.5	29.2	25.9 i	22.6	29.3	25.9 h	24.5	31.2	27.9 i	24.6	31.3	27.9 h	26.5	33.2	29.9 i	26.6	33.3	29.9 h	28.6	35.3	31.9 i
T2	24.1	16.2	20.2 e	24.2	16.3	20.2 e	26.1	18.2	22.2 e	26.2	18.3	22.2 e	28.1	20.2	24.2 e	28.2	20.3	24.2 e	30.1	21.2	25.7 e	30.2	21.3	25.7 e	32.3	23.3	27.7 e

T3	15.0	27.2	21.1 f	15.1	27.3	21.2 f	17.0	29.2	23.1 f	17.1	29.3	23.2 f	19.0	31.2	25.1 f	19.1	21.3	25.2 f	21.0	33.2	27.1 f	21.1	33.3	27.2 f	23.1	35.3	29.2 f
T4	14.2	20.1	17.2 a	14.3	20.2	17.2 a	16.2	22.1	19.2 a	16.3	22.2	19.2 a	18.2	24.1	21.2 a	18.3	24.2	21.2 a	19.2	26.1	22.7 a	19.3	26.2	22.7 a	21.3	28.2	24.7 a
T5	19.2	17.3	18.3 b	19.3	17.4	18.3 b	21.2	19.3	20.3 b	21.3	19.4	20.3 b	23.2	21.3	22.3 b	23.3	21.4	22.3 b	25.2	23.3	24.3 b	25.3	23.4	24.3 b	27.2	25.4	26.3 b
T6	21.5	28.2	24.9 j	21.6	28.3	24.9 j	23.5	30.2	26.9 j	23.6	30.3	26.9 j	25.5	32.2	28.9 i	25.6	32.3	29.9 i	27.5	34.2	30.9 j	27.6	34.3	30.9 j	29.6	36.3	32.9 j
T7	25.1	17.2	21.2 g	25.2	17.3	21.2 f	27.1	19.6	23.3 g	27.2	19.3	23.2 f	29.1	21.6	25.3 g	29.2	21.3	25.2 f	31.1	23.2	27.2 g	31.2	23.3	27.2 f	33.2	25.2	29.2 g
T8	16.4	28.7	22.6 h	16.3	28.8	22.5 g	18.1	30.7	24.4 h	18.3	30.8	24.5 g	20.0	31.7	25.9 h	20.1	31.8	26.0 g	22.4	33.7	28.1 h	22.5	33.8	28.1 g	24.0	35.7	29.9 h
T9	15.2	21.9	18.5 c	15.3	21.9	18.6 c	17.2	23.9	20.5 c	17.3	23.9	20.6 c	19.2	25.9	22.5 c	19.3	25.9	22.6 c	21.2	27.9	24.5 c	21.3	27.9	24.6 c	23.2	29.8	26.5 c
T10	20.2	18.3	19.3 d	20.3	18.4	19.3 d	22.2	20.3	21.3 d	22.3	20.4	21.5 d	24.2	22.3	23.3 d	24.3	22.4	23.3 d	26.2	24.3	25.3 d	26.3	24.4	25.3 d	28.3	26.3	27.3 d
Mean	19.1A	22.2B		19.2A	22.3B		21.1A	24.3B		21.2A	24.3B		23.1A	26.2B		23.2A	26.2B		25.0A	28.0B		25.1A	28.1B		27.0A	30.1B	
T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S	
F test	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
S.Em±	0.042	0.019	0.060	0.022	0.010	0.031	0.039	0.025	0.079	0.023	0.010	0.032	0.039	0.017	0.055	0.023	0.010	0.032	0.042	0.019	0.060	0.035	0.016	0.050	0.022	0.010	0.030
CD at 5%	0.121	0.054	0.171	0.062	0.028	0.088	0.113	0.051	0.160	0.066	0.029	0.093	0.112	0.050	0.158	0.066	0.029	0.093	0.121	0.054	0.171	0.101	0.045	0.143	0.062	0.028	0.087

S1- ambient storage, S2- cool storage.

T1-Aloe vera 60% + mango 40%, T2-Aloe vera 50% + mango 50%, T3-Aloe vera 40% + mango 60%, T4-Aloe vera 60% + guava 40%, T5-Aloe vera 50% + guava 50%, T6-Aloe vera 40% + guava 60%, T7-Aloe vera 60% + pine apple 40%, T8-Aloe vera 50% + pine apple 50%, T9-Aloe vera 40% + pine apple 60%, T10- Aloe vera 100%.

Table 3: Development and Standardization of Aloe vera jam with fruit flavours and evaluation of storage stability on Non reducing sugars (%)

Non-reducing sugars (%)																													
	Day 1			15th Day			30th Day			45th Day			60th Day			75th Day			90th Day			105th Day			120th Day				
	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean		
T1	7.8	7.8	7.8 h	7.8	7.9	7.9 g	8.8	8.8	8.8 g	8.8	8.9	8.8 g	9.87	9.9	9.9 h	9.8	9.9	9.9 f	10.8	10.9	10.9 e	10.8	10.9	10.9 f	11.9	11.9	11.9 g		
T2	7.9	7.5	7.7 g	8.0	7.6	7.8 f	9.0	8.6	8.8 g	9.0	8.6	8.8 g	10.0	9.6	9.8 g	10.0	9.6	9.8 f	10.0	10.6	10.3 c	10.0	10.6	10.3 d	11.1	11.7	11.4 e		
T3	6.5	7.9	7.2 e	6.5	8.0	7.3 d	7.5	9.0	8.2 d	7.5	9.0	8.3 e	8.5	10.0	9.3 d	8.6	10.0	9.3 d	9.5	11.0	10.3 c	9.5	11.0	10.2 c	10.6	12.0	11.3 d		
T4	7.9	7.3	7.6 f	8.0	7.4	7.7 e	9.0	8.4	8.7 f	9.0	8.4	8.7 f	10.0	10.4	10.2 i	10.6	10.4	10.2 g	11.0	10.4	10.7 d	11.0	10.4	10.7 e	12.0	11.4	11.7 f		
T5	7.7	7.6	7.6 f	7.7	7.6	7.7 e	8.7	8.6	8.7 f	8.7	8.6	8.7 f	9.7	9.6	9.7 f	9.7	9.6	9.7 e	10.7	10.6	10.7 d	10.7	10.6	10.7 e	11.8	11.6	11.7 f		
T6	7.9	8.8	8.4 i	8.0	8.9	8.4 h	9.0	9.9	9.4 h	9.0	9.9	9.4 h	10.0	10.9	10.4 j	10.0	10.9	10.4 h	11.0	11.9	11.4 f	11.0	11.9	11.4 g	12.0	12.9	12.5 h		
T7	6.4	7.9	7.1 d	6.5	8.0	7.2 d	7.9	9.0	8.4 e	7.5	9.0	8.2 d	8.9	10.0	9.4 e	8.5	10.0	9.3 d	9.5	11.0	10.3 c	9.5	11.0	10.3 d	10.6	12.0	11.3 d		
T8	7.9	5.7	6.8 c	8.0	5.6	6.8 c	9.0	6.5	7.7 c	9.0	6.7	7.8 c	9.0	7.5	8.2 b	9.1	7.7	8.4 b	10.0	8.9	9.4 b	10.1	8.9	9.5 b	11.0	9.5	10.3 b		
T9	8.9	3.8	6.4 b	9.0	3.9	6.5 b	10.0	4.9	7.5 b	10.0	4.9	7.4 b	11.0	5.8	8.4 c	11.0	5.9	8.5 c	11.7	6.9	9.3 b	12.0	6.9	9.5 b	13.0	7.9	10.5 c		
T10	7.9	1.6	4.7 a	8.0	1.6	4.8 a	9.0	2.6	5.8 a	9.0	2.6	5.8 a	10.0	3.6	6.8 a	10.9	3.7	6.9 a	11.0	4.6	7.8 a	11.0	4.6	7.8 a	12.0	5.7	8.91 a		
Mean	7.7B	6.6A		7.7B	6.6A		8.8B	7.6A		8.7B	7.6A		9.7B	8.7A		9.7B	8.8A		10.5B	9.7A		10.6B	9.7A		11.6B	10.7A			
T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S
F test	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
S.Em±	0.033	0.015	0.047	0.029	0.013	0.041	0.051	0.023	0.072	0.035	0.016	0.050	0.046	0.021	0.066	0.034	0.015	0.048	0.070	0.031	0.099	0.043	0.019	0.061	0.033	0.015	0.047		
CD at 5%	0.096	0.043	0.135	0.082	0.037	0.116	0.146	0.066	0.207	0.101	0.045	0.143	0.133	0.060	0.188	0.098	0.044	0.138	0.200	0.090	0.283	0.123	0.055	0.174	0.096	0.043	0.136		

S1- ambient storage, S2- cool storage.

T1-Aloe vera 60% + mango 40%, T2-Aloe vera 50% + mango 50%, T3-Aloe vera 40% + mango 60%, T4-Aloe vera 60% + guava 40%, T5-Aloe vera 50% + guava 50%, T6-Aloe vera 40% + guava 60%, T7-Aloe vera 60% + pine apple 40%, T8-Aloe vera 50% + pine apple 50%, T9-Aloe vera 40% + pine apple 60%, T10- Aloe vera 100%.

Table 4: Development and Standardization of Aloe vera jam with fruit flavours and evaluation of storage stability on Sensory evaluation

Colour appearance																													
	Day 1			15th Day			30th Day			45th Day			60th Day			75th Day			90th Day			105th Day			120th Day				
	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean		
T1	8.0	8.7	8.4 e	7.9	8.6	8.3 e	7.6	8.2	7.9 h	7.5	8.1	7.8 g	7.0	7.7	7.4 g	6.9	7.6	7.3 e	6.6	7.2	6.9 g	6.5	7.1	6.8 f	6.4	7.0	6.7 g		
T2	7.6	7.4	7.5 c	7.5	7.3	7.4 c	7.2	7.0	7.1 d	7.1	6.9	7.0 d	6.6	6.4	6.5 d	6.5	6.3	6.4 c	6.2	6.0	6.1 c	6.1	5.9	6.0 c	6.0	5.8	5.9 d		
T3	6.8	7.3	7.1 a	6.7	7.2	7.0 a	6.1	7.0	6.6 a	6.0	6.9	6.5 a	5.8	6.3	6.1 a	5.7	6.2	6.0 a	5.1	6.0	5.6 a	5.0	5.9	5.5 a	4.9	5.8	5.4 a		
T4	8.0	8.3	8.2 d	7.9	8.2	8.1 d	7.5	8.0	7.8 g	7.4	7.9	7.7 f	7.0	7.3	7.2 e	6.9	7.2	7.1 d	6.5	7.0	6.8 f	6.4	6.9	6.7 e	6.3	6.8	6.6 f		
T5	7.2	7.4	7.3 b	7.1	7.3	7.2 b	7.0	7.0	7.0 c	6.9	6.9	6.9 c	6.2	6.4	6.3 c	6.1	6.3	6.2 b	6.0	6.1	6.1 c	5.9	6.1	6.0 c	5.8	5.9	5.9 c		
T6	8.1	8.7	8.4 e	7.9	8.6	8.3 e	7.8	8.5	8.2 i	7.7	8.4	8.1 h	7.1	7.7	7.4 g	6.9	7.6	7.3 e	6.8	7.5	7.2 i	6.7	7.4	7.1 g	6.6	7.3	7.0 h		
T7	7.6	7.4	7.5 c	7.5	7.3	7.4 c	7.4	7.2	7.3 f	7.3	7.1	7.2 e	6.6	6.4	6.5 d	6.5	6.3	6.4 c	6.4	6.2	6.3 e	6.3	6.1	6.2 d	6.2	6.0	6.1 e		
T8	6.8	7.3	7.1 a	6.7	7.2	7.0 a	6.6	7.1	6.9 b	6.5	7.1	6.8 b	5.8	6.3	6.1 b	5.7	6.2	6.0 a	5.6	6.1	5.9 b	5.5	6.1	5.8 b	5.4	5.9	5.7 b		
T9	8.1	8.3	8.2 d	7.9	8.2	8.1 d	7.8	8.1	8.0 h	7.7	8.0	7.9 g	7.1	7.3	7.2 f	6.9	7.2	7.1 d	6.8	7.1	7.0 h	6.7	8.0	7.4 h	6.6	7.9	7.3 i		
T10	7.2	7.4	7.3 b	7.1	7.3	7.2 b	7.1	7.2	7.2 e	7.0	7.1	7.0 d	6.2	6.4	6.3 c	6.1	6.3	6.2 b	6.1	6.2	6.2 d	5.6	6.1	5.9 b	5.8	6.0	5.9 d		
Mean	7.5A	7.8B		7.4A	7.7B		7.2A	7.5B		7.1A	7.4B		6.5A	6.8B		6.4A	6.7B		6.2A	6.6B		6.1A	6.6B		6.0A	6.5B			
T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S
F test	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
S.Em±	0.083	0.0	0.11	0.03	0.01	0.04	0.02	0.01	0.04	0.02	0.01	0.03	0.03	0.01	0.04	0.03	0.01	0.04	0.02	0.01	0.03	0.04	0.02	0.06	0.02	0.01	0.03		
CD at 5%	0.029	0.0	0.04	0.09	0.04	0.13	0.08	0.03	0.11	0.07	0.03	0.10	0.08	0.03	0.12	0.09	0.04	0.13	0.07	0.03	0.11	0.13	0.06	0.19	0.06	0.02	0.09		

S1- Ambient storage, S2- Cool storage

T1-Aloe vera 60% + mango 40%, T2-Aloe vera 50% + mango 50%, T3-Aloe vera 40% + mango 60%, T4-Aloe vera 60% + guava 40%, T5-Aloe vera 50% + guava 50%, T6-Aloe vera 40% + guava 60%, T7-Aloe vera 60% + pine apple 40%, T8-Aloe vera 50% + pine apple 50%, T9-Aloe vera 40% + pine apple 60%, T10- Aloe vera 100%.

Table 5: Development and Standardization of *Aloe vera* jam with fruit flavours and evaluation of storage stability on Aroma

Aroma																											
Day 1			15th Day			30th Day			45th Day			60th Day			75th Day			90th Day			105th Day			120th Day			
S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	
T1	8.4	8.9	8.7 e	8.3	8.8	8.6 e	8.0	8.5	8.3 g	7.9	8.4	8.2 g	7.4	7.9	7.7 e	7.3	7.8	7.6 e	7.0	7.5	7.3 g	6.9	7.5	7.2 g	6.7	7.2	7.0 g
T2	7.8	8.1	8.0 c	7.7	8.0	7.9 c	7.5	7.8	7.7 c	7.4	7.7	7.6 c	6.8	7.1	7.0 c	6.7	7.0	6.9 c	6.5	6.8	6.7 c	6.4	6.7	6.6 c	6.2	6.5	6.4 c
T3	7.0	7.3	7.2 a	6.9	7.2	7.1 a	6.8	7.0	6.9 a	6.7	6.9	6.8 a	6.0	6.3	6.2 a	5.9	6.2	6.1 a	5.8	6.0	5.9 a	5.7	5.9	5.8 a	5.5	5.7	5.6 a
T4	8.2	8.5	8.4 d	8.1	8.4	8.3 d	7.8	8.1	8.0 e	7.7	8.0	7.9 e	7.2	7.5	7.4 d	7.1	7.4	7.3 d	6.8	7.1	7.0 e	6.7	7.0	6.9 e	6.5	6.8	6.7 e
T5	7.7	8.0	7.9 b	7.6	7.9	7.8 b	7.4	7.7	7.6 b	7.3	7.6	7.5 b	6.7	7.0	6.9 b	6.6	6.9	6.8 b	6.4	6.7	6.6 b	6.3	6.6	6.5 b	6.1	6.4	6.3 b
T6	8.4	8.9	8.7 e	8.3	8.8	8.6 e	8.2	8.7	8.5 h	8.1	8.6	8.4 h	7.4	7.9	7.7 e	7.3	7.8	7.6 e	7.2	7.7	7.5 h	7.1	7.6	7.4 h	6.8	7.4	7.1 h
T7	7.8	8.1	8.0 c	7.7	8.1	7.9 c	7.6	7.9	7.8 d	7.5	7.8	7.7 d	6.8	7.1	7.0 c	6.7	7.1	6.9 c	6.6	6.9	6.8 d	6.5	6.8	6.7 d	6.3	6.6	6.5 d
T8	7.1	7.3	7.2 a	6.9	7.2	7.1 a	6.8	7.1	7.0 a	6.7	7.0	6.9 a	6.1	6.3	6.2 a	5.9	6.2	6.1 a	5.8	6.1	6.0 a	5.7	6.0	5.9 a	5.5	5.8	5.7 a
T9	8.2	8.5	8.4 d	8.1	8.4	8.3 d	8.0	8.3	8.2 f	7.9	8.2	8.1 f	7.2	7.5	7.4 d	7.1	7.4	7.3 d	7.0	7.3	7.2 f	6.9	7.2	7.1 f	6.7	7.0	6.9 f
T10	7.7	8.1	7.9 b	7.6	7.9	7.8 b	7.5	7.8	7.7 c	7.4	7.7	7.6 c	6.7	7.1	6.9 b	6.6	6.9	6.8 b	6.5	6.8	6.7 c	6.4	6.7	6.6 c	6.2	6.5	6.4 c
Mean	7.8 ^a	8.2 ^b		7.7 ^A	8.1 ^B		7.6 ^A	7.9 ^B		7.5 ^A	7.8 ^B		6.8 ^A	7.2 ^B		6.7 ^A	7.1 ^B		6.6 ^A	6.9 ^B		6.5 ^A	6.8 ^B		6.3 ^A	6.6 ^B	
T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S	
F test	S	S	S	S	S	NS	S	S	S	S	S	S	S	S	S	S	S	NS	S	S	S	S	S	S	S	S	S
S.Em ±	0.02	0.01	0.04	0.02	0.01	0.04	0.02	0.01	0.03	0.02	0.01	0.03	0.02	0.01	0.04	0.02	0.01	0.04	0.02	0.01	0.03	0.02	0.01	0.04	0.02	0.00	0.03
CD at 5%	0.08	0.03	0.11	0.08	0.03	0.08	0.06	0.02	0.09	0.06	0.02	0.08	0.08	0.03	0.11	0.08	0.03	NS	0.06	0.02	0.09	0.08	0.03	0.11	0.06	0.02	0.08

S1- ambient storage, S2- cool storage.

T1-*Aloe vera* 60% + mango 40%, T2-*Aloe vera* 50% + mango 50%, T3-*Aloe vera* 40% + mango 60%, T4-*Aloe vera* 60% + guava 40%, T5-*Aloe vera* 50% + guava 50%, T6-*Aloe vera* 40% + guava 60%, T7-*Aloe vera* 60% + pine apple 40%, T8-*Aloe vera* 50% + pine apple 50%, T9-*Aloe vera* 40% + pine apple 60%, T10- *Aloe vera* 100%.

Table 6: Development and Standardization of *Aloe vera* jam with fruit flavours and evaluation of storage stability on Taste S1- ambient storage, S2- cool storage

Taste																											
Day 1			15th Day			30th Day			45th Day			60th Day			75th Day			90th Day			105th Day			120th Day			
S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	
T1	8.6	8.8	8.7 e	8.4	8.6	8.5 i	8.3	8.5	8.4 i	8.2	8.4	8.3 i	7.6	7.8	7.7 e	7.4	7.6	7.5 i	7.3	7.5	7.4 i	7.2	7.4	7.3 i	7.1	7.3	7.2 i
T2	7.8	8.4	8.1 c	7.7	8.3	8.0 f	7.6	8.2	7.9 f	7.5	8.1	7.8 f	6.8	7.4	7.1 c	6.7	7.3	7.0 f	6.6	7.2	6.9 f	6.5	7.1	6.8 f	6.4	7.0	6.7 f
T3	7.4	7.6	7.5 a	7.3	7.5	7.4 b	7.2	7.4	7.3 b	7.1	7.3	7.2 b	6.4	6.6	6.5 a	6.3	6.5	6.4 b	6.2	6.4	6.3 b	6.1	6.3	6.2 b	6.1	6.2	6.1 b
T4	8.3	8.5	8.4 d	8.2	8.4	8.3 h	8.1	8.3	8.2 h	8.1	8.2	8.1 h	7.3	7.5	7.4 d	7.2	7.4	7.3 h	7.1	7.3	7.2 h	7.0	7.2	7.1 h	6.9	7.1	7.0 h
T5	7.7	8.1	7.9 b	7.6	8.0	7.8 d	7.5	7.9	7.7 d	7.4	7.8	7.6 d	6.7	7.1	6.9 b	6.6	7.0	6.8 d	6.5	6.9	6.7 d	6.4	6.8	6.6 d	6.3	6.7	6.5 d
T6	8.6	8.8	8.7 e	8.5	8.7	8.6 j	8.4	8.6	8.5 j	8.3	8.5	8.4 j	7.6	7.8	7.7 e	7.5	7.7	7.6 j	7.4	7.6	7.5 j	7.3	7.5	7.4 j	7.2	7.4	7.3 j
T7	7.8	8.4	8.1 c	7.6	8.2	7.9 e	7.5	8.1	7.8 e	7.4	8.0	7.7 e	6.8	7.4	7.1 c	6.6	7.2	6.9 e	6.5	7.1	6.8 e	6.4	7.0	6.7 e	6.3	6.9	6.6 e
T8	7.4	7.6	7.5 a	7.2	7.4	7.3 a	7.1	7.3	7.2 a	7.0	7.2	7.1 a	6.4	6.6	6.5 a	6.2	6.4	6.3 a	6.1	6.3	6.2 a	6.1	6.2	6.1 a	5.9	6.1	6.0 a
T9	8.3	8.5	8.4 d	8.1	8.3	8.2 g	8.1	8.2	8.1 g	7.8	8.1	8.0 g	7.3	7.5	7.4 d	7.1	7.3	7.2 g	7.0	7.2	7.1 g	6.9	7.1	7.0 g	6.8	7.0	6.9 g
T10	7.7	8.1	7.9 b	7.5	7.9	7.7 c	7.4	7.8	7.6 c	7.3	7.7	7.5 c	6.7	7.1	6.9 b	6.5	6.9	6.7 c	6.4	6.8	6.6 c	6.3	6.7	6.5 c	6.2	6.6	6.4 c
Mean	8.0 ^A	8.3 ^B		7.8 ^A	8.1 ^B		7.7 ^A	8.0 ^B		7.6 ^A	7.9 ^B		7.0 ^A	7.3 ^B		6.8 ^A	7.1 ^B		6.7 ^A	7.0 ^B		6.6 ^A	6.9 ^B		6.5 ^A	6.8 ^B	
T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S	
F test	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
S.Em ±	0.02	0.01	0.03	0.02	0.00	0.03	0.02	0.01	0.03	0.02	0.01	0.03	0.02	0.01	0.03	0.02	0.00	0.03	0.02	0.00	0.03	0.02	0.01	0.03	0.02	0.01	0.03
CD at 5%	0.07	0.03	0.10	0.06	0.02	0.08	0.06	0.02	0.08	0.06	0.02	0.09	0.07	0.03	0.11	0.06	0.02	0.08	0.06	0.02	0.08	0.06	0.03	0.09	0.06	0.03	0.09

S1- ambient storage, S2- cool storage

T1-*Aloe vera* 60% + mango 40%, T2-*Aloe vera* 50% + mango 50%, T3-*Aloe vera* 40% + mango 60%, T4-*Aloe vera* 60% + guava 40%, T5-*Aloe vera* 50% + guava 50%, T6-*Aloe vera* 40% + guava 60%, T7-*Aloe vera* 60% + pine apple 40%, T8-*Aloe vera* 50% + pine apple 50%, T9-*Aloe vera* 40% + pine apple 60%, T10- *Aloe vera* 100%

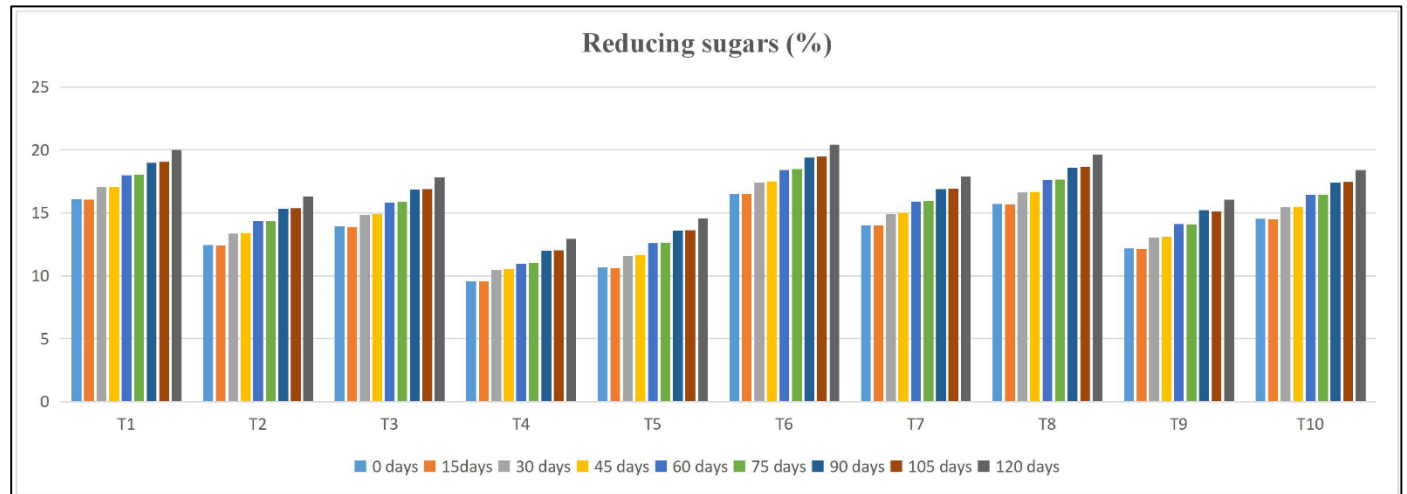
Table 7: Development and Standardization of *Aloe vera* jam with fruit flavours and evaluation of storage stability on Overall acceptability

Overall acceptability																											
Day 1			15th Day			30th Day			45th Day			60th Day			75th Day			90th Day			105th Day			120th Day			
S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	S1	S2	Mean	
T1	8.7	8.9	8.8 e	8.6	8.7	8.7 e	8.5	8.6	8.6 i	8.4	8.5	8.5 i	7.7	7.9	7.8 e	7.5	7.7	7.6 i	7.4	7.6	7.5 i	7.3	7.5	7.4 i	7.2	7.4	7.3 i
T2	8.0	8.5	8.3 c	7.9	8.4	8.2 c	7.9	8.4	8.2 f	7.8	8.3	8.1 f	7.0	7.5	7.3 c	6.8	7.4	7.1 f	6.7	7.3	7.0 f	6.6	7.2	6.9 f	6.5	7.1	6.8 f
T3	7.6	7.8	7.7 a	7.5	7.7	7.6 a	7.5	7.7	7.6 b	7.4	7.6	7.5 b	6.6	6.8	6.7 a	6.5	6.7	6.6 b	6.4	6.6	6.5 b	6.3	6.5	6.4 b	6.2	6.4	6.3 c
T4	8.4	8.6	8.5 d	8.3	8.5	8.4 d	8.3	8.5	8.4 h	8.2	8.4	8.3 h	7.4	7.6	7.5 d	7.3	7.5	7.4 h	7.2	7.4	7.3 h	7.1	7.3	7.2 h	7.0	7.2	7.1 h
T5	7.6	8.2	7.9 b	7.5	8.1	7.8 b	7.5	8.1	7.8 d	7.4	8.0	7.7 d	6.6	7.2	6.9 b	6.5	7.1	6.8 d	6.4	7.0	6.7 d	6.3	6.8	6.6 d	6.2	6.7	6.5 d
T6	8.7	8.9	8.8 e	8.5	8.8	8.7 e	8.6	8.7	8.7 j	8.5	8.6	8.6 j	7.7	7.9	7.8 e	7.6	7.8	7.7 j	7.5	7.7	7.6 j	7.4	7.6	7.5 j	7.3	7.5	7.4 j

T7	8.1	8.5	8.3 c	7.9	8.4	8.2 c	7.8	8.3	8.1 e	7.7	8.2	8.0 e	7.1	7.5	7.3 c	6.7	7.3	7.0 e	6.6	7.2	6.8 e	6.5	7.1	6.8 e	6.4	7.0	6.7 e
T8	7.6	7.8	7.7 a	7.5	7.7	7.6 a	7.4	7.6	7.5 a	7.3	7.5	7.4 a	6.6	6.8	6.7 a	6.4	6.6	6.5 a	6.3	6.5	6.4 a	6.2	6.4	6.3 a	6.1	6.3	6.2 a
T9	8.4	8.6	8.5 d	8.3	8.5	8.4 d	8.2	8.4	8.3 g	8.1	8.3	8.2 g	7.4	7.6	7.5 d	7.2	7.4	7.3 g	7.1	7.3	7.2 g	7.0	7.2	7.1 g	6.8	7.1	7.0 g
T10	7.6	8.2	7.9 b	7.5	8.1	7.8 b	7.4	8.0	7.7 c	7.3	7.9	7.6 c	6.6	7.2	6.9 b	6.4	7.0	6.7 c	6.3	6.8	6.6 c	6.2	6.7	6.5 c	6.1	6.6	6.4 b
Mean	8.1 A	8.4B		8.0 A	8.3B		7.9 A	8.2B		7.8 A	8.1B		7.1 A	7.4B		6.9 A	7.3B		6.8 A	7.1B		6.7 A	7.0B		6.6 A	6.9B	
	T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S	T	S	T×S
F test	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
S.Em ±	0.029	0.013	0.040	0.020	0.009	0.021	0.029	0.009	0.030	0.021	0.009	0.030	0.030	0.013	0.040	0.020	0.009	0.030	0.020	0.009	0.030	0.020	0.009	0.030	0.020	0.013	
CD at 5%	0.082	0.037	0.116	0.059	0.026	0.086	0.027	0.086	0.060	0.027	0.086	0.060	0.027	0.086	0.060	0.027	0.086	0.060	0.027	0.086	0.060	0.027	0.086	0.060	0.027	0.086	

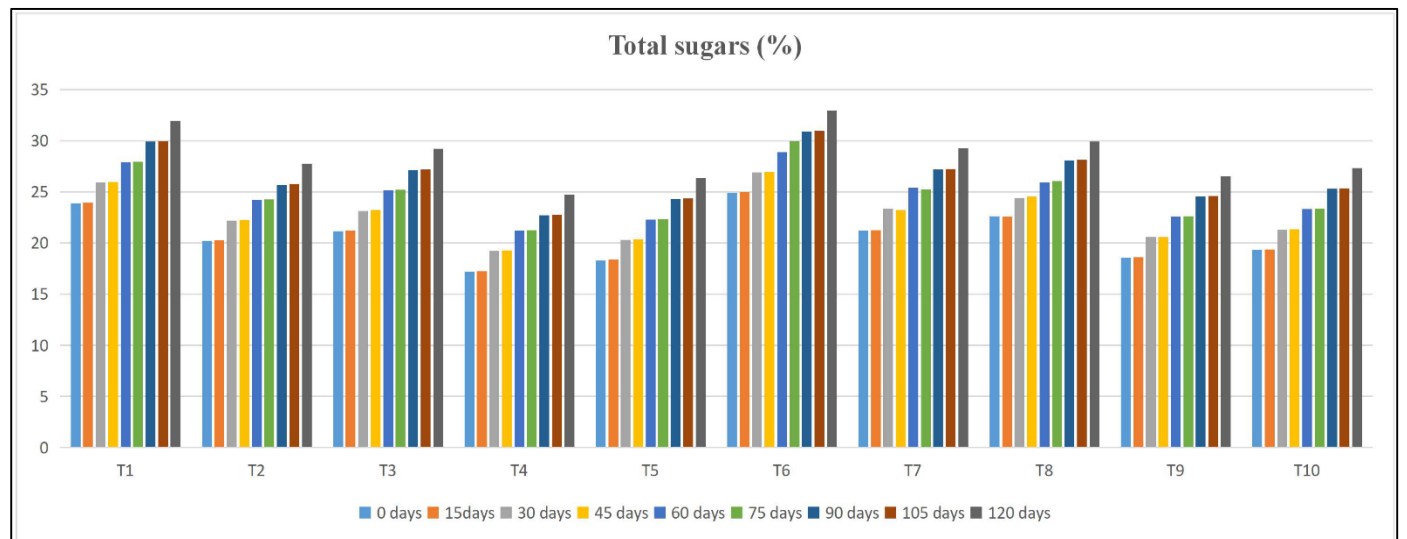
S1- ambient storage, S2- cool storage.

T1-Aloe vera 60% + mango 40%, T2-Aloe vera 50% + mango 50%, T3-Aloe vera 40% + mango 60%, T4-Aloe vera 60% + guava 40%, T5-Aloe vera 50% + guava 50%, T6-Aloe vera 40% + guava 60%, T7-Aloe vera 60% + pine apple 40%, T8-Aloe vera 50% + pine apple 50%, T9-Aloe vera 40% + pine apple 60%, T10- Aloe vera 100%.



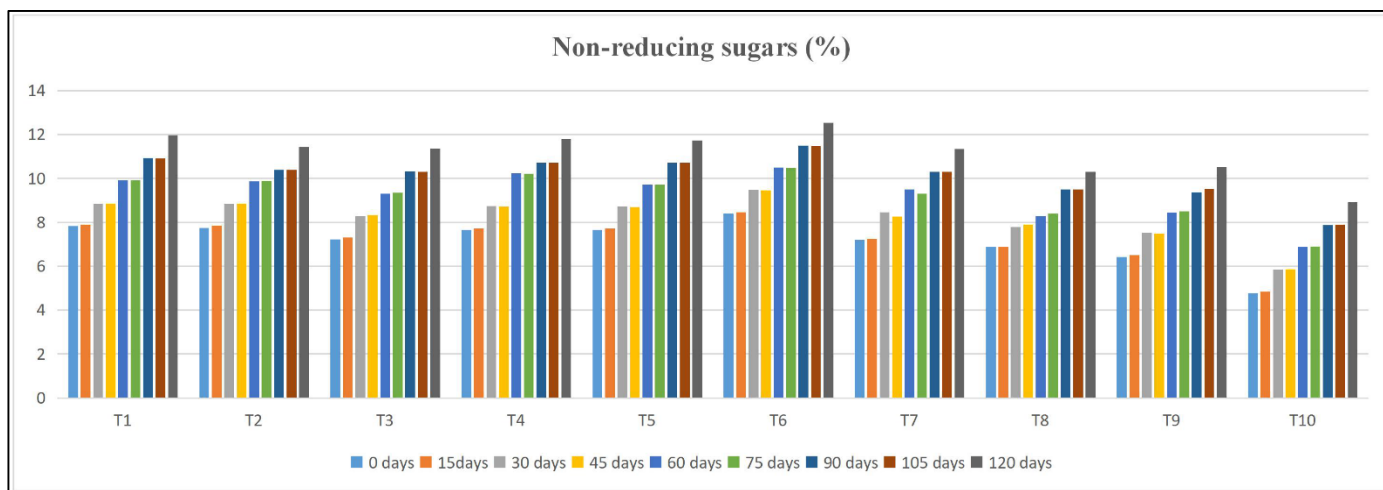
Note: T1-Aloe vera 60% + mango 40%, T2-Aloe vera 50% + mango 50%, T3-Aloe vera 40% + mango 60%, T4-Aloe vera 60% + guava 40%, T5-Aloe vera 50% + guava 50%, T6-Aloe vera 40% + guava 60%, T7-Aloe vera 60% + pine apple 40%, T8-Aloe vera 50% + pine apple 50%, T9-Aloe vera 40% + pine apple 60%, T10- Aloe vera 100%.

Fig 2: Development and Standardization of *Aloe vera* jam with fruit flavours and evaluation of storage stability on Reducing sugars (%)



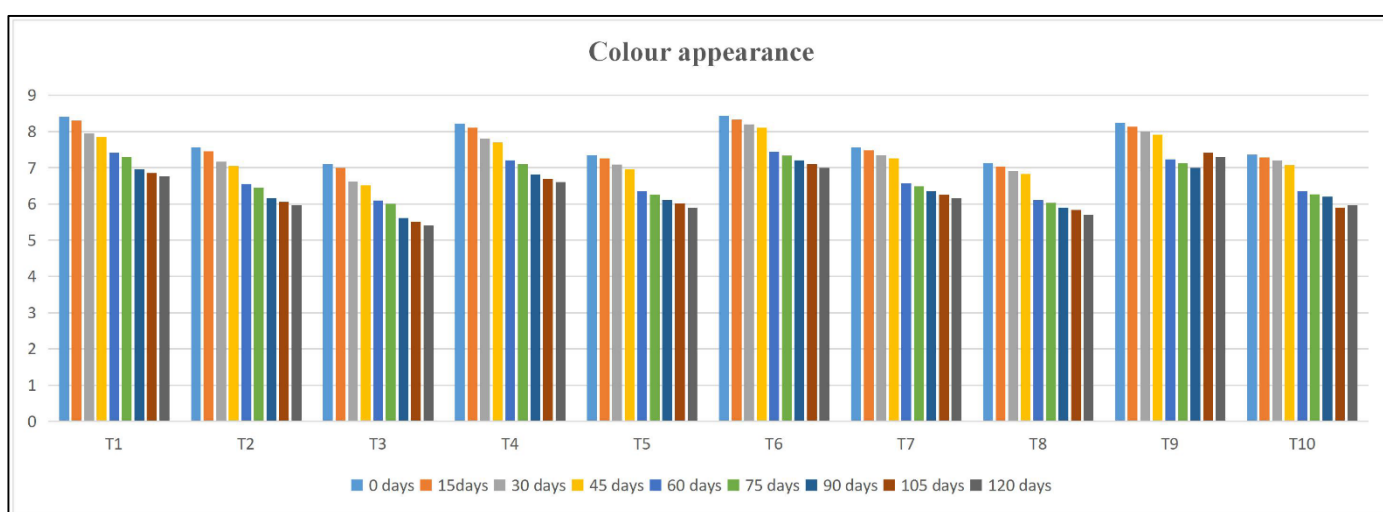
Note: T1-Aloe vera 60% + mango 40%, T2-Aloe vera 50% + mango 50%, T3-Aloe vera 40% + mango 60%, T4-Aloe vera 60% + guava 40%, T5-Aloe vera 50% + guava 50%, T6-Aloe vera 40% + guava 60%, T7-Aloe vera 60% + pine apple 40%, T8-Aloe vera 50% + pine apple 50%, T9-Aloe vera 40% + pine apple 60%, T10- Aloe vera 100%.

Fig 3: Development and Standardization of *Aloe vera* jam with fruit flavours and evaluation of storage stability on Total sugars (%)



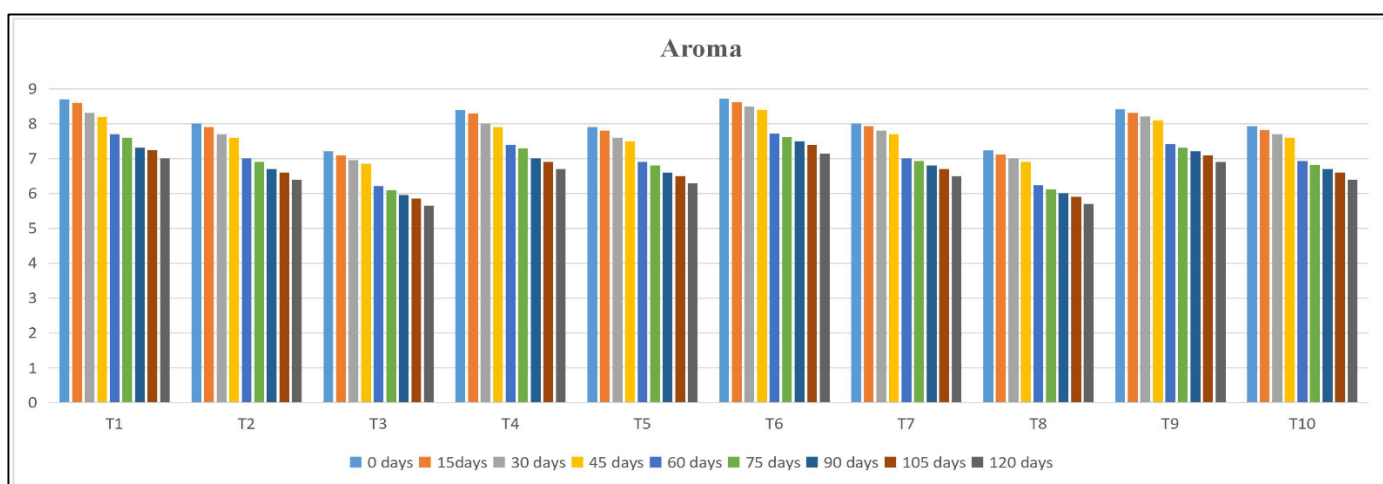
Note: T1-Aloe vera 60% + mango 40%, T2-Aloe vera 50% + mango 50%, T3-Aloe vera 40% + mango 60%, T4-Aloe vera 60% + guava 40%, T5-Aloe vera 50% + guava 50%, T6-Aloe vera 40% + guava 60%, T7-Aloe vera 60% + pine apple 40%, T8-Aloe vera 50% + pine apple 50%, T9-Aloe vera 40% + pine apple 60%, T10- Aloe vera 100%.

Fig 4: Development and Standardization of *Aloe vera* jam with fruit flavours and evaluation of storage stability on Non-reducing sugars (%)



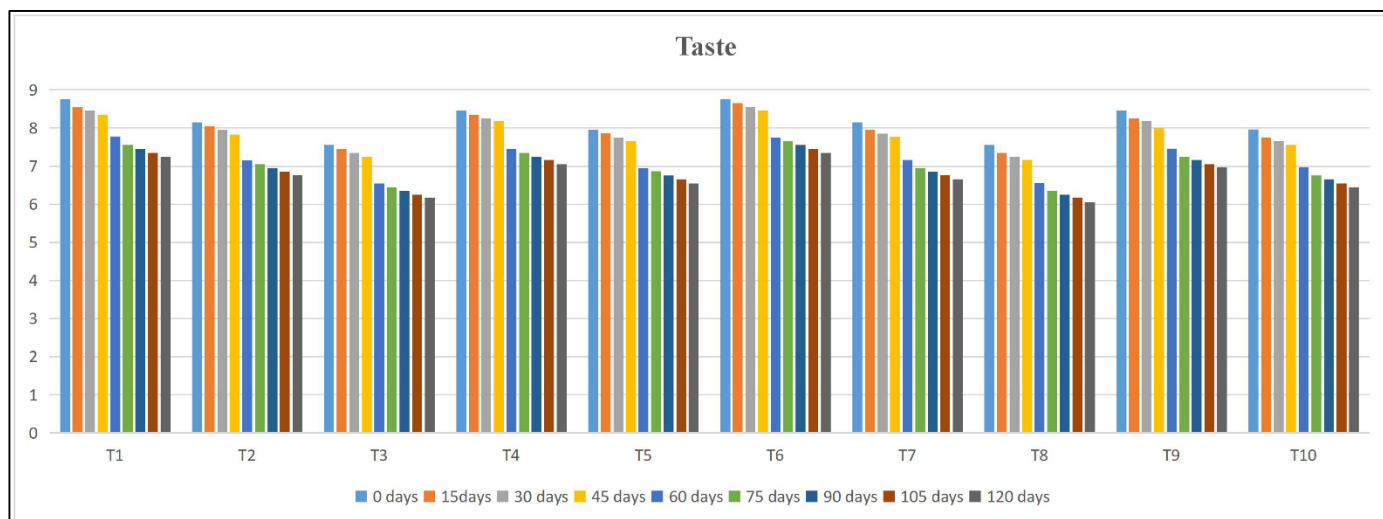
Note: T1-Aloe vera 60% + mango 40%, T2-Aloe vera 50% + mango 50%, T3-Aloe vera 40% + mango 60%, T4-Aloe vera 60% + guava 40%, T5-Aloe vera 50% + guava 50%, T6-Aloe vera 40% + guava 60%, T7-Aloe vera 60% + pine apple 40%, T8-Aloe vera 50% + pine apple 50%, T9-Aloe vera 40% + pine apple 60%, T10- Aloe vera 100%.

Fig 5: Development and Standardization of *Aloe vera* jam with fruit flavours and evaluation of storage stability on Colour appearance



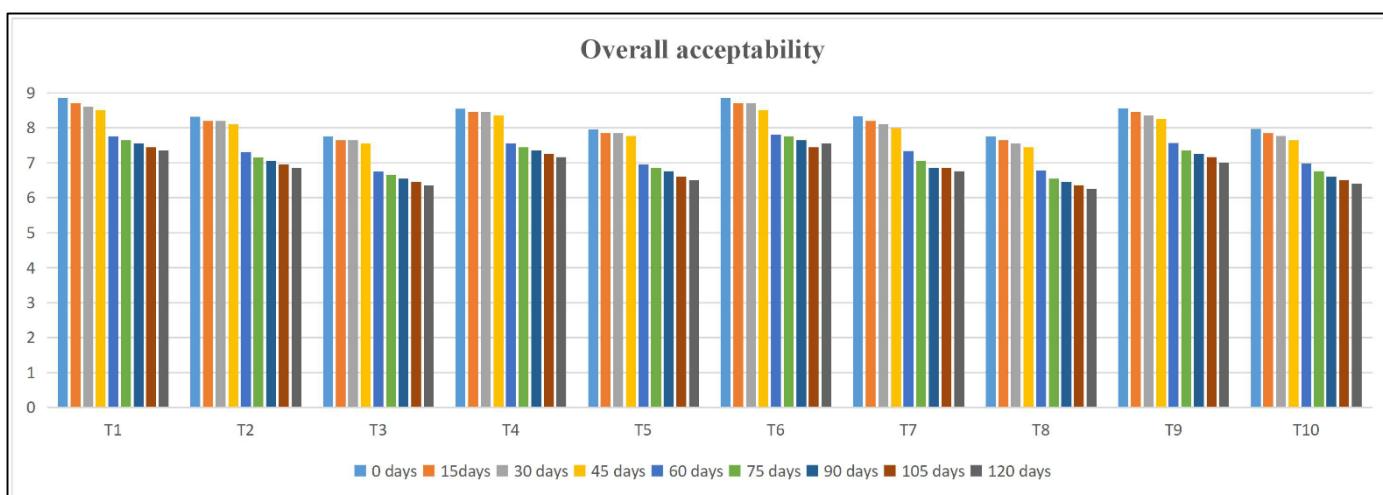
Note: T1-Aloe vera 60% + mango 40%, T2-Aloe vera 50% + mango 50%, T3-Aloe vera 40% + mango 60%, T4-Aloe vera 60% + guava 40%, T5-Aloe vera 50% + guava 50%, T6-Aloe vera 40% + guava 60%, T7-Aloe vera 60% + pine apple 40%, T8-Aloe vera 50% + pine apple 50%, T9-Aloe vera 40% + pine apple 60%, T10- Aloe vera 100%.

Fig 6: Development and Standardization of *Aloe vera* jam with fruit flavours and evaluation of storage stability on Aroma



Note: T1-Aloe vera 60% + mango 40%, T2-Aloe vera 50% + mango 50%, T3-Aloe vera 40% + mango 60%, T4-Aloe vera 60% + guava 40%, T5-Aloe vera 50% + guava 50%, T6-Aloe vera 40% + guava 60%, T7-Aloe vera 60% + pine apple 40%, T8-Aloe vera 50% + pine apple 50%, T9-Aloe vera 40% + pine apple 60%, T10- Aloe vera 100%.

Fig 7: Development and Standardization of *Aloe vera* jam with fruit flavours and evaluation of storage stability on Taste



Note: T1-Aloe vera 60% + mango 40%, T2-Aloe vera 50% + mango 50%, T3-Aloe vera 40% + mango 60%, T4-Aloe vera 60% + guava 40%, T5-Aloe vera 50% + guava 50%, T6-Aloe vera 40% + guava 60%, T7-Aloe vera 60% + pine apple 40%, T8-Aloe vera 50% + pine apple 50%, T9-Aloe vera 40% + pine apple 60%, T10- Aloe vera 100%.

Fig 8: Development and Standardization of *Aloe vera* jam with fruit flavours and evaluation of storage stability on Overall acceptability

Conclusion

The experiment, Development and Standardization of *Aloe vera* jam with fruit flavours and nutritional and organoleptic evaluation, different analysis of nutritional, sensory evaluation treatment *Aloe vera* 40% + guava 60% (T6) stored at cool condition was found to be satisfactory and acceptable in terms of sensory and nutritional quality.

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