



P-ISSN: 2349-8528

E-ISSN: 2321-4902

[www.chemijournal.com](http://www.chemijournal.com)

IJCS 2023; 11(1): 06-11

© 2023 IJCS

Received: 07-11-2022

Accepted: 13-12-2022

**Brunda NB**

Centre of Excellence on PHT,  
ASPEE, College of Horticulture  
and Forestry, Navsari  
Agricultural University, Navsari,  
Gujarat, India

**Desai Chirag**

Centre of Excellence on PHT,  
ASPEE, College of Horticulture  
and Forestry, Navsari  
Agricultural University, Navsari,  
Gujarat, India

**Mayani Jilen**

Centre of Excellence on PHT,  
ASPEE, College of Horticulture  
and Forestry, Navsari  
Agricultural University, Navsari,  
Gujarat, India

**Menaka M**

Ph. D., PHT, IARI, New Delhi,  
India

**Corresponding Author:****Brunda NB**

Centre of Excellence on PHT,  
ASPEE, College of Horticulture  
and Forestry, Navsari  
Agricultural University, Navsari,  
Gujarat, India

## Effect of blending proportion on sensory appeal of the blended squash using banana pseudostem sap with mango, papaya and *Aloe vera*

**Brunda NB, Desai Chirag, Mayani Jilen and Menaka M**

**Abstract**

The present investigation entitled “Effect of blending proportion on sensory appeal of the blended squash using banana pseudostem sap with mango, papaya and *Aloe vera*” was carried with 11 treatments along with different blending combinations of banana pseudostem sap: mango: papaya: *Aloe vera* (T<sub>1</sub>-75:0:25:0, T<sub>2</sub>-75:0:20:5, T<sub>3</sub>-75:5:20:0, T<sub>4</sub>-75:5:15:5, T<sub>5</sub>-75:10:15:0, T<sub>6</sub>-75:10:10:5, T<sub>7</sub>-75:15:10:0, T<sub>8</sub>-75:15:5:5, T<sub>9</sub>-75:20:5:0, T<sub>10</sub>-75:20:0:5, T<sub>11</sub>-75:25:0:0.). The prepared blended squash was filled in PET bottles and stored at room temperature up to 6 months. Sensory parameters (9 point Hedonic scale) were recorded at initial, 2, 4 and 6 months of storage. The results were statistically analyzed using completely randomized design with 3 repetitions. From the experimentation it was revealed that, organoleptic parameters showed decreasing trend up to 6 months storage of blended squash and no microbial growth was observed during 6 months storage period. Results revealed that, best quality blended squash with higher sensory acceptability and stable nutritional quality can be prepared using 75% banana pseudostem sap, 10% mango pulp, 10% papaya pulp and 5% *Aloe vera* juice. Thus, the developed technology can be commercially explored by the food processors for production of quality blended squash. Therefore, it will be helpful for profitable utilization of banana pseudostem and also helps in development of different value added products.

**Keywords:** Banana, pseudostem, blended, storage, sensory

**Introduction**

Banana is one of the major fruit crop grown in India. It is a monocarpic, monocotyledonous and herbaceous plant belonging to the family Musaceae and order Zingiberales. It has been suggested that cultivated bananas are originated from the islands of South-East Asia with India as one of its origin and have been developed by the cross of *Musa acuminata* and *Musa balbisiana* and their natural hybrids which are originally found in the rain forests of South-East Asia. At present, banana is being cultivated throughout the warm tropical regions of the world between 30° N and 30° S of the equator. Banana is basically a tropical crop, grows well in a temperature range of 15 °C to 35 °C with relative humidity of 75 to 85%. It prefers tropical humid low lands and is grown from the sea level to an elevation of 2000 m above mean sea level. Banana is well known for its antiquity and has an ancient history as old as Indian history.

It is popularly called as ‘*Kalpataru*’ (Tree of heaven) due to its socio-economic and multiple uses. It is consumed as staple food in many tropical and subtropical countries around the world. It provides balanced nutritional diet when compared to any other fruit. Plantain banana are the raw fruits which are consumed after cooking whereas dessert bananas are consumed after ripening. 100 g of banana fruit contains 75% of water, 89 Kcal of energy, 22.84 g of carbohydrates, 12.23 g of sugars, 2.6 g of dietary fibres and 8.7 mg of vitamin C with 358 mg of potassium (Sidhu and Zafar, 2018) [1]. Strongest natural fibre can be extracted from pseudostem and currency note paper was prepared from banana fibre in Japan (Meena *et al.*, 2018) [2]. Pseudostem juice is potential source of antioxidants such as gentisic acid, catechin, ferulic acid and protocatechuic acid. Thus, it is having the ability to cure urinary disorders and stone formation in gall bladder (Sharma *et al.*, 2017) [3]. It helps to dissolve calcium oxalate which is responsible to cause kidney stones.

Mango (*Mangifera indica* L.) belongs to the family Anacardiaceae. India is the leading producer of mango in the world. Mango is called the king of all fruits because of its luscious, aromatic flavour and a delicious taste in which sweetness and acidity are delightfully blended.

Mango has also strong antioxidant, anti-lipid peroxidation, immunomodulation, cardiotoxic, hypotensive, wound healing, antidiabetic and antileptic activities (Chaudhary *et al.*, 2017)<sup>[4]</sup>.

Papaya (*Carica papaya* L.) belongs to family Caricaceae. It is a common man's fruits, which is reasonably priced and has a high nutritive value. It is low in calories and rich in natural vitamins and minerals. Papaya places first among the fruits for vitamin C, vitamin A, riboflavin, foliate, calcium, thiamine, iron, niacin, potassium and fibre. Papaya when consumed regularly will ensure a good supply of vitamin A and C, which are essential for good health especially for eyesight and can help to prevent early age blindness in children. In recent years, the consumption of carotene products have increased steadily due to their recognition as an important source of natural antioxidant besides, anticancer activity of  $\beta$ -carotene being a precursor of vitamin (Gowri and Sri, 2015)<sup>[5]</sup>.

*Aloe vera* belongs to family Liliaceae. It is most widely used and commercially available medicinal plant because of its nutritional and therapeutic properties (Olariu, 2009)<sup>[6]</sup>. It is useful in curing various diseases like tumour, liver complaints, vomiting, asthma, jaundice and ulcer (Malhotra *et al.*, 2010)<sup>[7]</sup>. *Aloe vera* gel contains a glucomannan, which is a polysaccharide similar to guar and locust bean-gums and is believed to be the active constituents. The active principle of *Aloe* is a mixture of glycosides called aloin and a complex carbohydrate called acemannan. (Hamid *et al.*, 2014)<sup>[8]</sup>. *Aloe vera* contains around 98.5-99% moisture, the dry matter incorporates polysaccharides (55%), sugars (17%), minerals (16%), proteins (7%), lipids (4%) and phenolic compounds (1%). Carbohydrates comprising of mono and polysaccharides, are derived from the mucilage layer of the plant under the rind, surrounding the inner parenchyma or gel. The Egyptians call *Aloe vera* as "The plant of immortality".

## Materials and Methods

The experiment was carried out at the Department of Post-Harvest Technology, ASPEE College of Horticulture and Forestry as well as Banana Pseudostem Processing Unit, Soil and Water Management Research Unit, Navsari Agricultural University, Navsari, Gujarat during October 2020 to April 2021. Banana pseudostems were harvested from the fields of Soil and Water Management Research Unit, Navsari Agricultural University, Navsari immediately after harvesting of bunch in the second week of October. The banana pseudostems were washed and cleaned. These pseudostems were hygienically used for product processing in experiment. Pseudostem was split by sharp stainless steel knife and washed. From the sheaths juice was extracted with the use of sugarcane juicer. The collected juice was filtered by using muslin cloth to remove any pithy matter from juice.

**Extraction of *aloe vera* juice:** After sorting and washing, the lower 1 inch of the leaf base (the white part attached to the large rosette stem of the plant), the tapering point (2-4 inch) of the leaf top and the short sharp spines were removed to avoid presence of bitter compound *i.e.*, aloin content in the gel. The gel was extensively washed with drinkable water followed by cutting into small pieces and pre-treated with soybean extract (1.5% for 12 h) to remove aloin content (US Patent, 2007)<sup>[9]</sup>. After pre-treatment, the *Aloe vera* gel was washed with water. Then juice was extracted from gel using grinder. The juice was further boiled at 95 °C for 30 minutes then filled in glass bottles.

**Extraction of papaya pulp:** Fully ripened papaya fruits were sorted and then washed. The washed fruits are peeled, cut into halves and deseeded. After deseeding, the pulp was extracted using grinder. Then the pulp was boiled at 95 °C for 30 minutes. Pulp was filled in polyethylene bags and was cooled by keeping them in cold water, pulp was further used for blended squash preparation.

Blended squash was prepared using banana pseudostem sap along with juice/pulp of mango, papaya and *Aloe vera*. Total 11 treatments were fixed for preparation of blended squash using different blending proportions of mango, papaya and *Aloe vera*. Banana pseudostem sap was used instead of water for preparation of squash. The TSS and acidity of blended squash was kept constant 40 °B and 1%, respectively in all the treatments. The blended squash was periodically observed up to 6 months. The samples were subsequently used for organoleptic evaluation for 0, 2, 4 and 6 months of storage. The squash was stored in Polyethylene Terephthalate (PET) bottles of 200 ml capacity. The bottles were kept at room temperature which is ranged from 20 to 35 °C temperatures.

## Methodology adopted for recording the organoleptic parameters (adopted 9 point hedonic scale)

Sensory evaluation of blended squash was conducted during storage to assess the consumer's acceptance for the product. The prepared samples were evaluated for sensory qualities on the basis of colour, texture, taste, flavour and overall acceptability on a 9 point hedonic scale. For the accurate results, a panel of faculty members and PG students of Department of Post-Harvest Technology, NAU, Navsari were used for sensory analysis throughout the storage period interval. A taste breaker like chips with normal water was provided to the panel lists for mouth rinsing in between the sensory test.

## Experimental results and discussion

### 1. Colour (out of 9 points)

Data regarding sensory evaluation of blended squash with respect to colour value as per 9 point hedonic scale have been reported in the Table 1.

According to the colour score (based on 9 point Hedonic rating) of blended squash prepared using banana pseudostem sap, mango, papaya and *Aloe vera* juice/pulp. Based on the score given by the panelists the maximum score (9.10) was found in treatment T<sub>1</sub> (banana pseudostem sap: mango: papaya: *Aloe vera*, 75:0:25:0) and the lowest colour score (6.92) was recorded in the treatment T<sub>11</sub> (banana pseudostem sap: mango: papaya: *Aloe vera*, 75:25:0:0). The colour score of product decreased during 6 months storage. It might be due to non-enzymatic browning and oxidation of phenolic compounds in the squash leads to decreased colour value of blended squash storage. However, the colour score found acceptable above 7 *i.e.* all the treatments found acceptable except T<sub>11</sub>. Similar results were recorded by Uddin *et al.* (2019)<sup>[10]</sup> in mango and guava blended squash. Shiva *et al.* (2018)<sup>[11]</sup> also reported similar findings in banana pseudostem based novel functional blended ready to drink beverages with ginger rhizome and nannari root extracts during 6 months of storage. The findings were also supported by the results of Anonymous (2016)<sup>[12]</sup> in standardization of methods for noni juice preparation. Tahasildar (2016)<sup>[13]</sup> also reported similar findings in preparation of blended nectar using *Aloe vera*, guava and jamun.

**Table 1:** Effect of blended squash using banana pseudostem sap with mango, papaya and *Aloe vera* on colour score during storage.

Treatments	Storage Period (P)				Mean (T)
	P <sub>1</sub> (Initial)	P <sub>2</sub> (2 month)	P <sub>3</sub> (4 month)	P <sub>4</sub> (6 month)	
T <sub>1</sub> (75:0:25:0)	9.10	8.94	8.77	8.59	8.85
T <sub>2</sub> (75:0:20:5)	8.95	8.83	8.62	8.44	8.71
T <sub>3</sub> (75:5:20:0)	8.89	8.61	8.51	8.37	8.60
T <sub>4</sub> (75:5:15:5)	8.62	8.52	8.43	8.15	8.43
T <sub>5</sub> (75:10:15:0)	8.65	8.55	8.44	8.19	8.46
T <sub>6</sub> (75:10:10:5)	8.58	8.48	8.37	8.13	8.39
T <sub>7</sub> (75:15:10:0)	8.80	8.70	8.45	8.27	8.55
T <sub>8</sub> (75:15:5:5)	8.63	8.46	8.17	7.51	8.19
T <sub>9</sub> (75:20:5:0)	8.20	8.10	7.88	7.69	7.97
T <sub>10</sub> (75:20:0:5)	7.53	7.43	7.33	6.99	7.32
T <sub>11</sub> (75:25:0:0)	7.52	7.34	6.73	6.09	6.92
Mean (P)	8.50	8.36	8.15	7.86	
	<b>Treatment (T)</b>	<b>Period (P)</b>	<b>TXP</b>		
S.Em. ±	0.07	0.04	0.12		
C.D. at 5%	0.21	0.11	NS		
C.V.%	2.98	2.60			

## 2. Body (out of 9 points)

Data regarding sensory evaluation of blended squash with respect to body value as per 9 point hedonic scale have been reported in the Table 2.

Body score of blended squash (based on 9 point Hedonic rating) given by the panelist recorded maximum (8.37) in treatment T<sub>6</sub> (banana pseudostem sap: mango: papaya: *Aloe vera*, 75:10:10:5) and the minimum body value (7.12) was recorded in the treatment T<sub>3</sub> (banana pseudostem sap: mango: papaya: *Aloe vera*, 75:5:20:0). The highest body score was might be due to the consistency preferred by the panelists in the blended squash. Body score of blended squash showed

decreasing trend during 6 months storage period. But, the mean body score remain same as highest in treatment T<sub>6</sub> and lowest in treatment T<sub>3</sub>. However, body score above 7 was found acceptable *i.e.*, all the treatments are acceptable. The body score of product decreased during 6 months storage. This might be due to copolymerization, interaction with the phenolics and proteins as well as formation of cation complexes with the pectin substances during storage. Similar results were recorded by Thakur *et al.* (2018) [14] in wild pomegranate squash. Barwal *et al.* (2002) [15] also noted similar results in plum squash.

**Table 2:** Effect of blended squash using banana pseudostem sap with mango, papaya and *Aloe vera* on body score during storage

Treatments	Storage Period (P)				Mean (T)
	P <sub>1</sub> (Initial)	P <sub>2</sub> (2 month)	P <sub>3</sub> (4 month)	P <sub>4</sub> (6 month)	
T <sub>1</sub> (75:0:25:0)	7.36	7.25	7.00	6.96	7.14
T <sub>2</sub> (75:0:20:5)	7.58	7.36	7.19	7.10	7.31
T <sub>3</sub> (75:5:20:0)	7.29	7.15	7.02	7.00	7.12
T <sub>4</sub> (75:5:15:5)	7.66	7.44	7.22	7.13	7.36
T <sub>5</sub> (75:10:15:0)	7.83	7.67	7.59	7.47	7.64
T <sub>6</sub> (75:10:10:5)	8.56	8.42	8.34	8.16	8.37
T <sub>7</sub> (75:15:10:0)	8.47	8.39	8.18	7.96	8.25
T <sub>8</sub> (75:15:5:5)	7.91	7.82	7.78	7.60	7.78
T <sub>9</sub> (75:20:5:0)	7.92	7.73	7.61	7.49	7.69
T <sub>10</sub> (75:20:0:5)	8.29	8.11	8.01	7.88	8.07
T <sub>11</sub> (75:25:0:0)	7.86	7.69	7.57	7.24	7.59
Mean (P)	7.88	7.73	7.59	7.45	
	<b>Treatment (T)</b>	<b>Period (P)</b>	<b>TXP</b>		
S.Em. ±	0.03	0.02	0.06		
C.D. at 5%	0.10	0.05	NS		
C.V.%	1.54	1.36			

## 3. Flavour (out of 9 points)

Data regarding sensory evaluation of blended squash with respect to flavour value as per 9 point hedonic scale have been reported in the Table 3.

According to the flavour score of blended squash (based on 9 point Hedonic rating) the maximum flavor value (8.45) was recorded in treatment T<sub>6</sub> (banana pseudostem sap: mango: papaya: *Aloe vera*, 75:10:10:5) and minimum flavour score was recorded in the treatment T<sub>1</sub> (6.45) (banana pseudostem sap: mango: papaya: *Aloe vera*, 75:0:25:0). These results were due to blended flavour of fruits in treatment T<sub>6</sub> which was

preferred more by the panelists. During 6 months storage the flavour value of blended squash resulted decreasing trend this might be due to loss of flavour compounds during storage of blended squash. At the end of 6 months of storage higher mean flavour score was reported in treatment T<sub>6</sub> and lower mean flavour score was recorded in treatment T<sub>1</sub>. Similar results were reported by Desai *et al.* (2016) [16] in preparation of flavoured candy from central core of banana pseudostem. Ladda *et al.* (2016) [17] also reported similar results in formulation of noni based syrup along with *Aloe vera* and aonla juice for blending.

**Table 3:** Effect of blended squash using banana pseudostem sap with mango, papaya and *Aloe vera* on flavor score during storage

Treatments	Storage Period (P)				Mean (T)
	P <sub>1</sub> (Initial)	P <sub>2</sub> (2 month)	P <sub>3</sub> (4 month)	P <sub>4</sub> (6 month)	
T <sub>1</sub> (75:0:25:0)	6.84	6.55	6.30	6.12	6.45
T <sub>2</sub> (75:0:20:5)	7.39	7.31	7.22	7.12	7.26
T <sub>3</sub> (75:5:20:0)	7.68	7.30	7.04	6.94	7.24
T <sub>4</sub> (75:5:15:5)	8.32	8.20	8.09	7.82	8.11
T <sub>5</sub> (75:10:15:0)	7.58	7.41	7.37	7.27	7.41
T <sub>6</sub> (75:10:10:5)	8.76	8.45	8.34	8.28	8.45
T <sub>7</sub> (75:15:10:0)	8.65	8.32	8.25	8.09	8.33
T <sub>8</sub> (75:15:5:5)	8.13	8.05	7.95	7.86	8.00
T <sub>9</sub> (75:20:5:0)	8.04	7.84	7.58	7.49	7.74
T <sub>10</sub> (75:20:0:5)	8.10	7.86	7.62	7.46	7.76
T <sub>11</sub> (75:25:0:0)	7.95	7.86	7.77	7.68	7.81
Mean (P)	7.95	7.74	7.59	7.47	
	Treatment (T)	Period (P)	TXP		
S.Em. ±	0.06	0.04	0.12		
C.D. at 5%	0.17	0.10	NS		
C.V.%	2.57	2.77			

#### 4. Taste (out of 9 points)

Data regarding the changes in the taste score of the blended squash during storage have been presented in the Table 4.

Looking at taste score of blended squash (based on 9 point Hedonic rating) showed maximum taste score (8.58) in treatment T<sub>6</sub> (banana pseudostem sap: mango: papaya: *Aloe vera*, 75:10:10:5) and minimum taste score (7.13) was recorded in the treatment T<sub>1</sub> (banana pseudostem sap: mango: papaya: *Aloe vera*, 75:0:25:0). Higher taste score was might be due to blended taste of pseudostem sap, mango, papaya and *Aloe vera* also due to sweeter taste of squash due to equal ratio of mango and papaya. During storage taste score of

blended squash showed decreasing trend, this might be due to effect of temperature on squash leads to biochemical changes that leads to loss of volatile compounds in the blended squash. However, taste score of above 7 was found acceptable *i.e.*, in terms of taste score all the treatments found acceptable. Bhavya Sree and Vanajalata (2015) [18] also recorded similar results on blended RTS beverage with different proportions of sweet orange and pomegranate juice during 3 months storage period. Priyanka *et al.* (2015) [19] also noted similar results in jamun blended squash with mango, pineapple and grapes during 4 months of storage.

**Table 4:** Effect of blended squash using banana pseudostem sap with mango, papaya and *Aloe vera* on taste score during storage

Treatments	Storage Period (P)				Mean (T)
	P <sub>1</sub> (Initial)	P <sub>2</sub> (2 month)	P <sub>3</sub> (4 month)	P <sub>4</sub> (6 month)	
T <sub>1</sub> (75:0:25:0)	7.38	7.16	7.08	6.90	7.13
T <sub>2</sub> (75:0:20:5)	7.69	7.41	7.28	7.09	7.37
T <sub>3</sub> (75:5:20:0)	7.52	7.31	7.23	6.92	7.25
T <sub>4</sub> (75:5:15:5)	8.47	8.31	8.25	8.07	8.27
T <sub>5</sub> (75:10:15:0)	7.73	7.61	7.31	7.25	7.47
T <sub>6</sub> (75:10:10:5)	8.77	8.62	8.50	8.42	8.58
T <sub>7</sub> (75:15:10:0)	8.55	8.41	8.33	8.23	8.38
T <sub>8</sub> (75:15:5:5)	7.92	7.79	7.73	7.63	7.77
T <sub>9</sub> (75:20:5:0)	8.51	8.30	8.07	7.65	8.13
T <sub>10</sub> (75:20:0:5)	8.32	8.20	8.04	7.99	8.14
T <sub>11</sub> (75:25:0:0)	8.35	8.25	8.11	8.08	8.20
Mean (P)	8.11	7.94	7.81	7.66	
	Treatment (T)	Period (P)	TXP		
S.Em. ±	0.04	0.03	0.08		
C.D. at 5%	0.11	0.07	NS		
C.V.%	1.65	1.84			

#### 5. Overall acceptability (out of 9 points)

Data regarding the effect of blending and storage on overall acceptability score of blended squash by using 9 point Hedonic scale have been reported in the in the Table 5.

Overall acceptability score is one of the important sensory attribute that determine the product preference by the consumer. Based on the previous results of body, flavour and taste of blended squash the maximum overall acceptability score (8.58) was recorded in treatment T<sub>6</sub> (banana pseudostem sap: mango: papaya: *Aloe vera* 75:10:10:5) and the minimum overall acceptability score (7.37) was recorded in the treatment T<sub>1</sub> (banana pseudostem sap: mango: papaya: *Aloe*

*vera* 75:0:25:0). During storage overall acceptability score of blended squash recorded decreasing trend, this was due to decreased colour, texture, flavour and taste scores of blended squash. However, the product found acceptable above score 7 *i.e.*, all the treatments are acceptable. Similar results were reported by Marimuthu and Narayanan (2019) [20] in preparation of noni RTS beverages and Sridhar *et al.* (2017) [21] in effect blending of jamun juice and guava juice on sensory quality and storage. Sravanthi *et al.* (2014) [22] also noted similar results in custard apple squash and nectar during the storage period.

**Table 5:** Effect of blended squash using banana pseudostem sap with mango, papaya and *Aloe vera* on overall acceptability score during storage

Treatments	Storage Period (P)				Mean (T)
	P <sub>1</sub> (Initial)	P <sub>2</sub> (2 month)	P <sub>3</sub> (4 month)	P <sub>4</sub> (6 month)	
T <sub>1</sub> (75:0:25:0)	7.52	7.43	7.35	7.17	7.37
T <sub>2</sub> (75:0:20:5)	7.61	7.52	7.26	7.26	7.41
T <sub>3</sub> (75:5:20:0)	7.65	7.46	7.23	7.17	7.38
T <sub>4</sub> (75:5:15:5)	8.54	8.40	8.32	8.23	8.37
T <sub>5</sub> (75:10:15:0)	7.76	7.61	7.30	7.14	7.45
T <sub>6</sub> (75:10:10:5)	8.75	8.63	8.52	8.42	8.58
T <sub>7</sub> (75:15:10:0)	8.60	8.47	8.44	8.26	8.44
T <sub>8</sub> (75:15:5:5)	7.78	7.69	7.63	7.44	7.63
T <sub>9</sub> (75:20:5:0)	7.80	7.70	7.67	7.43	7.65
T <sub>10</sub> (75:20:0:5)	8.35	8.23	8.13	8.09	8.20
T <sub>11</sub> (75:25:0:0)	8.41	8.32	8.26	8.13	8.28
Mean (P)	8.07	7.95	7.83	7.70	
	Treatment (T)	Period (P)	TXP		
S.Em. ±	0.04	0.03	0.11		
C.D. at 5%	0.11	0.09	NS		
C.V.%	1.70	2.37			

### Conclusion

Based on the above findings, best quality blended squash with higher sensory acceptability, stable nutritional quality and good benefit cost ratio can be prepared using 75% banana pseudostem sap, 10% mango pulp, 10% papaya pulp and 5% *Aloe vera* juice. It can be stored successfully for 6 months in PET bottles at ambient temperature when preserved by 350 ppm of KMS and citric acid. Utilization of banana pseudostem sap/juice helps to reduce the cost of production as well as it helps to increase nutritional status of product. Blending of fruit juice/pulp resulted in good sensory as well as nutritional quality in blended squash. Thus, the developed technology can be commercially explored by the food processors for production quality blended squash. Therefore, it will be helpful for profitable utilization of banana pseudostem and also for development of different value added products.

### Acknowledgement

We thank to Navsari Agricultural University, Navsari for providing necessary facilities to conduct research during Covid pandemic and of Excellence on PHT, ASPEE, College of Horticulture and Forestry, Navsari for necessary support. I would like to thank all my advisory members in successful completion of my research work.

E-mail; redybrunda112@gmail.com

### References

- Sidhu JS, Zafar TA. Bioactive compounds in banana fruits and their health benefits. *Food Quality Safety*. 2018;2(4):183-188.
- Meena SK, Deeshmukh RV, Giri VV. Efficacy of consequent, alternate and mix spraying of protectant and systemic fungicides against sigatoka leaf spot disease of banana. *Int. J Chem. Studies*. 2018;6(5):129-132.
- Sharma M, Patel SN, Sangwan RS, Singh SP. Biotransformation of banana pseudostem extract into a functional juice containing value added biomolecules of potential health benefits. *Indian J Experimental Biol*. 2017;55:453-462.
- Chaudhary M, Deen B, Gautam DK, Mishra KK. Studies on development of squash from mango pulp and *Aloe vera* gel blend. *Int. J Curr. Microbiol. App. Sci*. 2017;6(7):1962-1969.
- Gowri M, Sri R. Formulation and analysis of papaya and carrot based squash. *Int. J Sci. Res*. 2017;6(11):642-644.
- Olariu R. *Aloe vera* – Natures silent healer. *J Hygiene Public Health*. 2009;59(4):79-88.
- Malhotra R, Tyagi SM, Saini P. Studies on *aloe vera* a component of functional foods. *Beverage Fd. World*. 2010;37(7):36-39.
- Hamid GH, Ei-Kholany EA, Nahla EA. Evaluation of *aloe vera* gel as antioxidant and antimicrobial ingredients in orange-carrot blend nectars. *Middle East J Agri. Res*. 2014;3(4):1122-1134.
- Patent US. Method for the removal of aloin, emodin and isoemodin from *Aloe vera* by Treatment with oxidase. US 20070275107 A1; c2007.
- Uddin MN, Wahab S, Muhammad A, Bilal H, Din MU, Nawaz H, et al. Development and quality evaluation of mango and guava blended squash during storage. *Pure Appl. Biol*. 2019;8(2):1182-1190.
- Shiva KN, Adiyaman P, Ravindra Naik, Marimuthu N. Development and standardization of banana pseudostem based novel functional blended ready to drink (RTD) beverages and studies nutritional changes during storage. *Int. J Life Sci*. 2018;7(3):151-158.
- Anonymous. Standardization of procedure for preparation of noni juice. *Research Accomplishments and Recommendation*, 12<sup>th</sup> AGRESKO Report; c2016.
- Tahasildhar L. Optimization of blend for the preparation of nectar using *Aloe vera*, guava and jamun. M.Sc. thesis submitted to Navsari Agricultural University, Navsari. (Unpublished); c2016.
- Thakur NS, Dhaygude GS, Thakur A, Kumar P, Hamid. Studies on preparation and preservation of squash from wild pomegranate (*Punica granatum L.*) fruits and its quality evaluation during storage. *Int. J Bio-resource and Stress Mgt*. 2018;9(1):07-012.
- Barwal VS, Sharma R, Lal BB. Use of sorbitol for the preparation of seasoned plum squash. *J Fd. Sci. Tech*. 2002;39(4):413-417.
- Desai CS, Desai CD, Desai SK, Mistry PS, Patel JM, Vaidya HB. Preparation of flavoured candy from central core of banana pseudostem. *Asian J Dairy Fd. Res*. 2016;35(4):341-342.
- Ladda GD, Siddiqui R, Satwadhar PN, Hashmi IH. Studies on formulation of noni (*Morinda citrifolia L.*) based syrup. *Fd. Sci. Res. J*. 2016;7(2):259-265.
- Bhavya Sree K, Vanajalata K. Studies on blending of sweet orange and pomegranate juice for RTS beverage. *Int. J Tropical Agril*. 2015;33(2):209-212.

19. Priyanka N, Dorajeerao AVD, Sudhavani V, Umakrishna K. Physico-chemical characters and sensory evaluation of jamun based blended squash beverages during storage. *Plant archives*. 2015;15(2):939-946.
20. Marimuthu M, Narayanan SM. Preparation of noni (*Morinda citrifolia* L.) RTS beverages. *Int. Res. J Eng. Tech.* 2019;4(25):35-38.
21. Sridhar D, Prashanth P, Kumar MR, Jyothi G. Studies on the effect of blending of jamun juice and guava juice on sensory quality and storage. *Int. J Pure App. Bio sci.* 2017;5(4):1089-1096.
22. Sravanthi T, Waghrey K, Daddam JR. Studies on preservation and processing of custard apple (*Annona squamosa* L.) pulp. *Int. J Plant Animal Ent. Sci.* 2014;4(3):676-682.