Original Research Article

Study the physio-chemical properties of value added papaya candy from different herbal extracts in term of quality and shelf life.

Abstract

The present experiment was conducted during year 2022 at the Post Harvest Laboratory of Horticulture Department, Naini Agricultural Institute, Sam Higginbottom University of Agriculture, Technology & Sciences, Prayagraj to study "Study on development and value addition of papaya candy with different herbal extracts" The experiment was conducted in Completely randomized design (CRD) with thirteen treatments replicated thrice. Total number of treatments were ten viz. (T_0 Control +70% sugar), (T_1 Sugar 70%+Cardamom 1.0%), (T_2Sugar 70%+Cardamom 1.5%), (T_3 Sugar70%+Ginger1.0%), (T_4 Sugar 70%+ Ginger 1.5%), (T_5 Sugar 70%+tulsi 1.0%), (T_6 Sugar 70%+ tulsi 1.5%), (T_7 Sugar 70%+lemon grass 1.0%), (T_8 Sugar 70%+ lemon grass 1.5%), (T_9 Sugar 70%+Rose syrup 1.0%), (T_{10} Sugar 70%+ Rose syrup 1.5%), (T_{11} Sugar 70%+mint 1.0%) and (T_{12} Sugar 70%+ mint 1.5%). The treatment (T_4 Sugar 70%+ Ginger 1.5%) was found superior in respect of parameters like TSS(^{0}Brix), ph, acidity(%), ascorbic acid (mg/100g), reducing sugar(%), non-reducing sugar(%), total sugar(%), Colour score texture flavour taste overall acceptability. Benefit cost Ratio was found highest (1.82) in the treatment (T_9 Sugar 70%+Rose syrup 1.0%).

Keywords: Herbal papaya candy, Sugar, Cardamom, Ginger, Leman, Tulsi, Rose syrup and Mint.

Introduction

Papaya (*Carica papaya* Linn) belongs to family Caricaceae is one of the important tropical plant cultivated in India, ranks first in its production. It is native to tropical America, the papaya has spread to several regions of the world, and its largest producers are India, Brazil, Mexico, Nigeria and well distributed in most of the tropical countries. It is generally found in tropical zone of planet as it thrives in hot, humid and frost – free climates. The internal cavity of the fruit contains numerous black seeds, edible, spicy flavor, coated with mucilaginous substance and it comprise about 15% of the wet weight of the fruit (Desai, Wagh, 1995).The seed of papaya has antimicrobial activity against Trichomonas vaginalis trophozoites.

India ranks second for fruits and vegetables producer in the world followed by China. India, during 2017-18 has produced about 97358 Thousand MT fruits and 184394 Thousand MT vegetables in about 6506 Thousand Ha and 10259 Thousand Ha areas, respectively (Horticultural Statistics At a Glance, 2018, Moa & FW Gal). In spite of this, the per capita availability of fruit in India is 107 gm/day which is below the recommended 120 gm/day. India's share of global exports of fresh fruits and processed fruit products is also quite major compared to other major fruit producers of the world (Bung, 2012). Unfortunately fruits and vegetables being perishable in nature get wasted to the tune of 20-30 % in the supply chain due to improper handling, transportation and poor post-harvest management; and only 2 % of them are processed in to value added

products and the rest is consumed fresh. The importance of a high fruit and vegetable intake as an essential part of a healthy life style has received an increasing amount of attention during the last decade. The benefits of an adequate intake of fruit and vegetables are observed in a wide range of epidemiological studies. It is well known that an adequate intake of fruit and vegetables promotes health as it is important in the prevention of non-communicable diseases like cardiovascular disease, obesity and cancer, which today are large public health problems. The health promoting effect of fruit and vegetables is related with their bioactive constituents, in particular phenol compound. These substances act through several mechanisms, such as reducing oxidative stress, improving lipoprotein profile, lowering blood pressure and improving homeostasis regulation thus contributing to healthy lifestyle (Scalbertat et al., 2005). Consumption of fruits and vegetables has been promoted because of their vitamins, minerals, antioxidants, and fiber content.

Papaya fruits are rich in enzymes called papain and chymopapain that break down the proteins from the food a person eats into amino acids and therefore helps digestion.. The anti-inflammatory properties and high antioxidant content of papaya is known to prevent cholesterol oxidation and can be used in preventative treatments against strokes, heart attacks, diabetic, heart disease and blood pressure (Eno et al., 2000). Nutritionally,papaya is a good source of calcium and an excellent source of vitamins A and C (Nakasone and Paull 1998).

Papaya provides significant amounts of vitamin C. Typically, this fruit is consumed when ripe, soft, and sweet. It is eaten in fruit salads, with yogurt, or blended asjuice. Unripe papaya is used in cooking, particularly curry and stew dishes. Because ithas a high pectin content, papaya is also prepared as jelly, jam, and preserves. Papaya (Carica papaya L.) is well known for its exceptional nutritional and medicinal properties throughout the world. In the present review article, a humble attempt is made to compile all the strange facts available about this tasty fruit. This tasty fruit of Papaya is popular among family members of all ages for the delicious dishes derived Parle *et al.,* (2011).
Apart from using as a dessert fruit, a variety of products such as tutti-frutti, jam, jelly, sauce, toffee, bar, leather, pickles, crystallized fruits and dried slices may also be prepared from unripe or ripe papaya fruits. However, due to inadequate facilities for post harvest handling, storage, processing and preservation, still the post-harvest losses are reported to be around 30%. Hence there is a need to take up scientific handling and post harvest management including processing to reduce thelosses Nilam *et al.*,(2021).

Materials and Methods

The present investigation entitled **Study "the physio-chemical properties of value added papaya candy from different herbal extracts in term of quality and shelf life"** was laid out in the Post Harvest Laboratory of Horticulture Department, Sam Higginbottom University of Agriculture, Technology and Sciences, Prayagraj during the year 2022.

The treatments were **T_0**: Control (standard recipe), **T_1**: Sugar 70%+Cardamom 1.0%,**T_2**: Sugar 70%+Cardamom 1.5%, **T_3**: Sugar 70%+Ginger 1.0%, **T_4:** Sugar 70%+ Ginger 1.5%, **T_5**: Sugar 70%+tulsi 1.0%, **T_6**: Sugar 70%+ tulsi 1.5%, **T_7**: Sugar 70%+lemon grass 1.0%**T_8**: Sugar 70%+ lemon grass 1.5% **T_9**: Sugar 70%+Rose syrup 1.0% **T_{10}**: Sugar 70%+ Rose syrup 1.5% **T_{11}**: Sugar 70%+mint 1.0% **T_{12}**: Sugar 70%+ mint 1.5%.

Results and Discussion

TSS of papaya candy was observed to increase continuously up to the end of research under ambient storage conditions. total soluble solid (^{0}Brix) observed was (86.79) with the treatment T4 Sugar 70%+ Ginger 1.5%, followed by treatment T_3 Sugar 70%+Ginger 1.0%, While the lowest total soluble solid (^{0}Brix) observed was (73.54) with the treatment control. After 30 days storage of papaya candy highest total soluble solid (^{0}Brix) observed was (87.45) with the treatment T4 Sugar 70%+ Ginger 1.5%,, followed by treatment T_3 Sugar 70%+Ginger 1.0%, While the minimum total soluble solid (^{0}Brix) observed was (73.96) with the treatment control.

Increase in TSS during storage can be due to conversion of polysaccharides into sugars during hydrolysis process. Therefore, TSS found to increase slightly with increase in storage period. Similar findings reported by **Manivsagan (2011)** in karonda candy and by **Navitha and Mishra (2018)** in papaya candy.

PH of papaya candy was observed to decrease continuously up to the end of research under ambient storage conditions. lowest pH observed was (4.170) with the treatment T4 Sugar 70%+ Ginger 1.5%,, followed by treatment T_3 Sugar 70%+Ginger 1.0%, While the lowest pH highest was (6.203) with the treatment control. After 45 days storage of papaya candy lowest pH observed was (4.280) with the treatment T4 Sugar 70%+ Ginger 1.5%, followed by treatment T_3 Sugar 70%+Ginger 1.0%, While the maximum pH observed was (6.313) with the treatment control.

Variations in pH during storage may be due to change in chemical properties which are affected by storage conditions. This finding agreed with the finding of **Vikram and Prasad (2014),** & **Rayguru et al., (2008)** also reported similar trend in apple jam.

Acidity of papaya candy was observed to decrease continuously up to the end of research under ambient storage conditions. lowest acidity (%) observed was (0.207). with the treatment T0 Control, followed by treatment T_3 Sugar 70%+Ginger 1.0%, While the maximum acidity (%) observed was (3.21) with thetreatment T_{11} Sugar 70%+mint 1.0%. After 45 days storage of papaya candy lowest acidity (%) observed was (0.195) with the treatment T_0 Control, followed by treatment T_3 Sugar 70%+Ginger 1.0%, While the maximum acidity (%) observed was (0.310) with the treatment T_{11} Sugar 70%+mint 1.0%.

The decrease in acidity (%) in papaya candy during storage can be the result of chemical interaction between papaya candy constituents induced by temperature and action of enzyme. Similar results were reported by **Neelesh (2014)** in papaya candy and Navitha and **Mishra (2018)** in Ber candy.

Ascorbic acid (mg/100g) of papaya candy was observed to decrease continuously up to the end of research under ambient storage conditions. maximum ascorbic acid (mg/100g) observed was (19.05) with the treatment T4 Sugar 70%+ Ginger 1.5%, followed by treatment T_3 Sugar 70%+Ginger 1.0%, While the lowest ascorbicacid (mg/100g) observed was (13.82) with the treatment control. After 45 days storage of papaya candy maximum ascorbic acid (mg/100g) observed was (18.45) with the treatment T4 Sugar 70%+ Ginger 1.5%, followed by treatment T_3 Sugar 70%+Ginger 1.0%, While the lowest ascorbicacid (mg/100g) observed was (13.16) with the treatment control.

Ascorbic acid in any food commodity plays important role in deciding its shelf life. Similar results were reported by **Daisy and Gehlot (2006)** in Aonla preserve., and **Neelesh (2014)** in papaya cand.

Reducing sugar (%) of papaya candy was observed to increase continuously up to the end of research under ambient storage conditions. maximum reducing sugar (%) observed was (14.31) with the treatment T4 Sugar 70%+ Ginger 1.5%, followed by treatment T_3 Sugar 70%+Ginger 1.0%, While the lowest reducing sugar (%) observed was (10.15) with the treatment control. After 45 days storage of papaya candy maximum reducing sugar (%) observed was (18.30) with the treatment T4 Sugar 70%+ Ginger 1.5%, followed by treatment T_3 Sugar 70%+Ginger 1.0%, While the lowest reducing sugar (%) observed was (13.64) with the treatment control.

Reducing sugar in any food commodity plays important role in deciding its shelf life. Usually, high sugar content makes the moisture unavailable for the growth of microorganisms, thus improves the shelf life of food. Similar results were reported by **Daisy and Gehlot (2006)** in Aonla preserve.

Non-reducing sugar (%) of papaya candy was observed to increase continuously up to the endof research under ambient storage conditions. lowest non-reducing sugar (%) observed was (4.26) with the treatment T4 Sugar 70%+ Ginger 1.5%, followed by treatment T_3 Sugar 70%+Ginger 1.0%, While the maximum non-reducing sugar (%) observed was (6.19) with the treatment control. After 45 days storage of papaya candy lowest non-reducing sugar (%) observed was (4.92) with the treatment T4 Sugar 70%+ Ginger 1.5%, followed by treatment T_3 Sugar 70%+Ginger 1.0%, While the maximum non-reducing sugar (%) observed was (7.18) with the treatment control.).

The non-reducing sugar of papaya candy show increasing trend in all treatment during storage and it may be due to increase in time interval and temperature, similar reading was recorded by **Bajaj and Mehta (2007)** in citrus juice.

Total sugar (%) of papaya candy was observed to increase continuously up to the end of research under ambient storage conditions. maximum total sugar (%) observed was (18.56) with the treatment T4 Sugar 70%+ Ginger 1.5%, followed by treatment T_3 Sugar 70%+Ginger 1.0%, While the minimum total sugar (%) observed was (16.340) with the treatment control. After 45 days storage of papaya candy maximum total sugar (%) observed was (23.21) with the treatment T4 Sugar 70%+ Ginger 1.5%, followed

by treatment T_3 Sugar 70%+Ginger 1.0%, While the minimum total sugar (%) observed was (20.82) with the treatment control.

Total sugar in any food commodity plays important role in deciding its shelf life. Usually, high sugar content makes the moisture unavailable for the growth of microorganisms, thus improves the shelf life of food. Similar results were reported by **Krishnaveni et al. (2001)** in jack fruit RTS**, Jain et al. (2004)** in papaya cubes.

Colour and Appearance (sensory score) of papaya candy was observed to decrease continuously up to the end of research under ambient storage conditions. highest score of colour was noted (8.73) with the treatment T_4 Sugar 70%+ Ginger 1.5% followed by treatment T_3 Sugar 70%+Ginger 1.0%, While least score of colour was noted (6.58) with the treatment T_0 Control. After 45 day storage, highest score of colour was noted (8.19) with the treatment T_4 Sugar 70%+ Ginger 1.5% followed by treatment T_3 Sugar 70%+Ginger 1.0%, While least score of colour was noted (5.92) with the treatment T0 Control.

Colour and in any food commodity plays important role in deciding its market value. colour is an attribute of food quality and loss of colour by osmotic dehydration process is one of the most significant changes. Similar results were reported by **Heredia (2004)** and **Singh et al., (2012)** in ber candy.

Texturer (sensory score) of papaya candy was observed to decrease continuously up to the endof research under ambient storage conditions. highest score of texture was noted (8.18) with the treatment T_4 Sugar 70%+ Ginger 1.5% followed by treatment T_3 Sugar 70%+Ginger 1.0%, While least score of texture was noted (6.14) with the treatment T0 Control. After 45 day storage, highest score of texture was noted (7.64) with the treatment T_4 Sugar 70%+ Ginger 1.5% followed by treatment T_3 Sugar 70%+Ginger 1.0%, While least score of texture was noted (5.48) with the treatment T_0 Control.

Texture in any food commodity plays important role in deciding its market value. This might be due to degradation of volatile substance and flavor constituents. Similar results were reported by **Ames (2003)** and **Chavan (2010)** in Jackfruit candy.

Flavour (sensory score) of papaya candy was observed to decrease continuously up to the endof research under ambient storage conditions. highest score of flavour was noted (8.82) with the treatment T_4 Sugar 70%+ Ginger 1.5% followed by treatment T_3 Sugar 70%+Ginger 1.0%, While least score of flavour was noted (8.51) with the treatment T0 Control. After 45 day storage, highest score of flavour was noted (8.28) with the treatment T_4 Sugar 70%+ Ginger 1.5% followed by treatment T_3 Sugar 70%+Ginger 1.0%, While least score of flavour was noted (5.85) with the treatment T0 Control.

flavor in any food commodity plays important role in deciding its market value. This might be due to degradation of volatile substance and flavor constituents. Similar results were reported by **Hasanuzzaman (2014)** in tomato candy and **Deepak Singh Rathore (2020)** in Ber candy.

Taste (sensory score) of papaya candy was observed to decrease continuously up to the endof research under ambient storage conditions. , highest score of taste was noted (8.48) with the treatment T_4 Sugar 70%+ Ginger 1.5% followed by treatment T_3 Sugar 70%+Ginger 1.0%, While least score of taste was noted (6.20) with the treatment T0 Control. After 45 day storage, highest score of taste was noted (7.94) with the treatmentT_4 Sugar 70%+ Ginger 1.5% followed by treatment T_3 Sugar 70%+Ginger 1.0%, While least score of taste was noted (5.54) with the treatment T0 Control.

The decreasing trend was observed for flavour, taste and texture with decrease storage period. This might be due to degradation of volatile substance and flavor constituents. Similar result was reported by **Nayak et al., (2011)** in aonla segments-in-syrup prepared from stored fruits. **Jain et al. (2007)** in aonla RTS beverages.

Overall acceptability (sensory score) of papaya candy was observed to increase continuously up to the end of research under ambient storage conditions. highest score of overallacceptability was noted (8.55) with the treatment T_4 Sugar 70%+ Ginger 1.5% followed by treatment T_3 Sugar 70%+Ginger 1.0%, While least score of overall acceptability was noted (6.36) with the treatment T0 Control. After 45 day storage, highest score of overall acceptability was noted (8.01) with the treatment T_4 Sugar 70%+ Ginger 1.5% followed by treatment T_3 Sugar 70%+Ginger 1.0%, While least score of overall acceptability was noted (5.70) withthe treatment T0 Control.

Overall acceptability in any food commodity plays important role in deciding its market value. The decrease in overall acceptability score may be due to absorption of atmospheric moisture, dilution of sugars and changes in acidity, oxidation of ascorbic acid as well as changes in biochemical constituents of candy. Similar results were reported by **Sharma (2013)** in apple candy.

Table 1: Effect of herbal flavour on TSS (^{0}Brix), p^H and Acidity % of papaya candy during storage

S. No.	Treatment	Total soluble solid (^{0}Brix)				pH				Acidity (%)			
		0 Day	15 Days	30 Days	45 Days	0 Day	15 Days	30 Days	45 Days	0 Day	15 Days	30 Days	45 Days
1	T_0	73.54	73.64	73.79	73.96	6.203	6.233	6.273	6.313	0.207	0.204	0.200	0.195
2	T_1	85.17	85.35	85.57	85.82	5.145	5.175	5.215	5.255	0.277	0.269	0.260	0.259
3	T_2	85.51	85.66	85.87	86.13	5.040	5.070	5.110	5.150	0.275	0.266	0.265	0.263
4	T_3	86.28	86.45	86.67	86.95	4.470	4.500	4.540	4.580	0.269	0.260	0.259	0.257
5	T_4	86.79	86.95	87.15	87.45	4.170	4.200	4.240	4.280	0.264	0.255	0.254	0.252
6	T_5	83.41	83.55	83.77	84.05	5.417	5.447	5.487	5.527	0.305	0.296	0.295	0.293
7	T_6	83.65	83.77	84.01	84.25	5.430	5.460	5.500	5.540	0.293	0.284	0.283	0.281
8	T_7	83.26	83.37	83.59	83.85	5.250	5.280	5.320	5.360	0.286	0.277	0.276	0.275
9	T_8	84.71	84.84	85.05	85.30	4.787	4.817	4.857	4.897	0.282	0.273	0.272	0.270
10	T_9	82.15	82.29	82.51	82.77	5.733	5.763	5.803	5.843	0.312	0.303	0.302	0.301
11	T_{10}	82.63	82.78	83.01	83.26	5.677	5.707	5.747	5.787	0.309	0.300	0.299	0.298
12	T_{11}	81.40	81.56	81.77	82.03	5.800	5.830	5.870	5.910	0.321	0.312	0.311	0.310
13	T_{12}	81.56	81.70	81.92	82.16	5.737	5.767	5.807	5.847	0.317	0.308	0.307	0.306
	F-Test	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**
	S.Ed. (±)	**0.427**	**1.326**	**0.428**	**0.929**	**0.058**	**0.088**	**0.0277**	**0.150**	**0.003**	**0.013**	**0.003**	**0.014**
	C.D. at 0.5%	**0.881**	**2.736**	**0.883**	**1.918**	**0.120**	**0.182**	**0.572**	**0.310**	**0.006**	**0.027**	**0.007**	**0.029**

Table 2: Effect of herbal flavour on Ascorbic acid (mg/100g) Reducing sugar % And Non-reducing sugar % of papaya candy during storage

S. No.	Treatment	Ascorbic acid (mg/100g)				Reducing sugar (%)				Non- reducing sugar (%)			
		0 Day	15 Days	30 Days	45 Days	0 Day	15 Days	30 Days	45 Days	0 Day	15 Days	30 Days	45 Days
1	T_0	13.82	13.60	13.38	13.16	10.15	11.31	12.48	13.64	6.19	6.52	6.85	7.18
2	T_1	17.75	17.55	17.35	17.15	11.53	12.75	13.97	15.19	5.09	5.37	5.65	5.93
3	T_2	18.10	17.90	17.70	17.50	12.47	13.72	14.97	16.22	4.65	4.88	5.11	5.34
4	T_3	18.71	18.51	18.31	18.11	13.22	14.44	15.66	16.88	4.38	4.63	4.88	5.13
5	T_4	19.05	18.85	18.65	18.45	14.31	15.64	16.97	18.30	4.26	4.48	4.70	4.92
6	T_5	14.78	14.58	14.38	14.18	11.63	12.84	14.05	15.26	5.33	5.54	5.75	5.96
7	T_6	15.26	15.06	14.86	14.66	11.77	12.88	13.99	15.10	5.24	5.49	5.74	5.99
8	T_7	16.39	16.19	15.99	15.79	11.95	13.17	14.39	15.61	5.14	5.37	5.60	5.83
9	T_8	17.12	16.92	16.72	16.52	12.10	13.22	14.34	15.46	5.13	5.34	5.55	5.76
10	T_9	14.27	14.07	13.87	13.67	11.33	12.44	13.55	14.66	5.38	5.63	5.88	6.13
11	T_{10}	14.59	14.39	14.19	13.99	11.48	12.68	13.88	15.08	5.29	5.51	5.73	5.95
12	T_{11}	14.07	13.87	13.67	13.47	11.08	12.30	13.52	14.74	5.82	6.03	6.24	6.45
13	T_{12}	14.33	14.13	13.93	13.73	11.20	12.41	13.62	14.83	5.72	5.94	6.16	6.38
	F-Test	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**
	S.Ed. (±)	**0.100**	**0.105**	**0.098**	**0.519**	**0.378**	**0.469**	**0.316**	**0.376**	**0.236**	**0.242**	**0.236**	**0.345**
	C.D. at 0.5%	**0.207**	**0.218**	**0.203**	**1.071**	**0.780**	**0.969**	**0.652**	**0.776**	**0.486**	**0.499**	**0.488**	**0.712**

Table 3: Effect of herbal flavour on Ascorbic acid (mg/100g) Reducing sugar % And Non-reducing sugar % of Mango candy during storage

S. No.	Treatment	Total sugar %				Colour				Texture			
		0 Day	15 Days	30 Days	45 Days	0 Day	15 Days	30 Days	45 Days	0 Day	15 Days	30 Days	45 Days
1	T_0	16.340	17.835	19.330	20.825	6.58	6.36	6.14	5.92	6.14	5.92	5.70	5.48
2	T_1	16.620	18.120	19.620	21.120	8.47	8.29	8.11	7.93	7.93	7.75	7.57	7.39
3	T_2	17.120	18.600	20.080	21.560	8.62	8.44	8.26	8.08	7.97	7.79	7.61	7.43
4	T_3	17.600	19.070	20.540	22.010	8.65	8.47	8.29	8.11	8.06	7.88	7.70	7.52
5	T_4	18.567	20.117	21.667	23.217	8.73	8.55	8.37	8.19	8.18	8.00	7.82	7.64
6	T_5	16.957	18.377	19.797	21.217	7.93	7.75	7.57	7.39	7.49	7.31	7.13	6.95
7	T_6	17.003	18.363	19.723	21.083	8.14	7.96	7.78	7.60	7.59	7.41	7.23	7.05
8	T_7	17.090	18.540	19.990	21.440	8.25	8.07	7.89	7.71	7.63	7.45	7.27	7.09
9	T_8	17.237	18.567	19.897	21.227	8.34	8.16	7.98	7.80	7.70	7.52	7.34	7.16
10	T_9	16.710	18.070	19.430	20.790	7.73	7.55	7.37	7.19	7.27	7.09	6.91	6.73
11	T_{10}	16.773	18.193	19.613	21.033	7.78	7.60	7.42	7.24	7.36	7.18	7.00	6.82
12	T_{11}	16.903	18.333	19.763	21.193	7.62	7.44	7.26	7.08	7.24	7.06	6.88	6.70
13	T_{12}	16.923	18.353	19.783	21.213	7.62	7.44	7.26	7.08	7.46	7.28	7.10	6.92
	F-Test	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**
	S.Ed. (±)	**0.361**	**0.437**	**0.349**	**0.3814**	**0.070**	**0.074**	**0.093**	**0.072**	**0.073**	**0.067**	**0.093**	**0.062**
	C.D. at 0.5%	**0.746**	**0.901**	**0.720**	**0.786**	**0.415**	**0.152**	**0.191**	**0.148**	**0.152**	**0.138**	**0.192**	**0.129**

Table 4: Effect of herbal flavour on score of flavour, teste and overall acceptability of papaya candy during storage.

S. No.	Treatment	Flavour				Taste				Overall acceptability			
		0 Day	15 Days	30 Days	45 Days	0 Day	15 Days	30 Days	45 Days	0 Day	15 Days	30 Days	45 Days
1	T_0	6.51	6.29	6.07	5.85	6.20	5.98	5.76	5.54	6.36	6.14	5.92	5.70
2	T_1	8.62	8.44	8.26	8.08	7.83	7.65	7.47	7.29	8.21	8.03	7.85	7.67
3	T_2	8.68	8.50	8.32	8.14	8.21	8.03	7.85	7.67	8.37	8.19	8.01	7.83
4	T_3	8.77	8.59	8.41	8.23	8.33	8.15	7.97	7.79	8.45	8.27	8.09	7.91
5	T_4	8.82	8.64	8.46	8.28	8.48	8.30	8.12	7.94	8.55	8.37	8.19	8.01
6	T_5	8.08	7.90	7.72	7.54	7.31	7.13	6.95	6.77	7.70	7.52	7.34	7.16
7	T_6	8.25	8.07	7.89	7.71	7.44	7.26	7.08	6.90	7.86	7.68	7.50	7.32
8	T_7	8.37	8.19	8.01	7.83	7.55	7.37	7.19	7.01	7.95	7.77	7.59	7.41
9	T_8	8.40	8.22	8.04	7.86	7.09	6.91	6.73	6.55	7.88	7.70	7.52	7.34
10	T_9	7.79	7.61	7.43	7.25	7.17	6.99	6.81	6.63	7.49	7.31	7.13	6.95
11	T_{10}	8.03	7.85	7.67	7.49	7.38	7.20	7.02	6.84	7.64	7.46	7.28	7.10
12	T_{11}	7.55	7.37	7.19	7.01	7.35	7.17	6.99	6.81	7.44	7.26	7.08	6.90
13	T_{12}	7.44	7.26	7.08	6.90	6.71	6.53	6.35	6.17	7.31	7.13	6.95	6.77
	F-Test	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**
	S.Ed. (±)	**0.051**	**0.053**	**0.056**	**0.066**	**0.092**	**0.093**	**0.125**	**0.122**	**0.037**	**0.037**	**0.031**	**0.048**
	C.D. at 0.5%	**0.106**	**0.109**	**0.116**	**0.135**	**0.191**	**0.192**	**0.258**	**0.252**	**0.077**	**0.076**	**0.064**	**0.099**

Conclusion

Based on the above results, it is concluded that papaya can be processed into candy with improved nutritional quality. The papaya candy prepared from treatment T_4 Sugar 70%+ Ginger 1.5%. was found to be the best which comprised of Total soluble solid (^{0}Brix), pH, Acidity (%), Ascorbic acid (mg/100g), Reducing sugar (%), Non-Reducing sugar (%), Total sugar (%) and the highest score for Colour score, Texture score, Flavour score, Taste score and Overall acceptability score with The maximum B:C ratio was observed in T_9 Sugar 70%+Rose syrup 1.0%.

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