STUDIES ON PREPARATION OF MANGO PICKLE FROM DIFFERENT GENOTYPES OF AKOLA MAHARASHTRA REGION

Abstract

Mango relishes are extremely popular throughout the Asian continent. In every Indian household, they are the condiment most frequently ingested. It is rich in antioxidants and contains vitamin K and fibre, among other nutrients. Four recipes of mango pickle, namely Recipe-1, Recipe-2 (Recipe-1 + niger seed 150 g), Recipe-3 (Recipe-1 + garlic 200 g), and Recipe-4 (Recipe-1 + niger seed 150 g + garlic 200 g) were standardised for the preparation of mango pickle using three genotypes (Galu, Shravanya, and Telya). The TSS (Total Soluble Solid), pH, titratable acidity, total sugar, reducing sugar, non-reducing sugar, ascorbic acid, and moisture content of the pickle sample were analysed. Genotype-3 and Recipe-4 (Recipe-1 + niger seed 150 g + garlic 200 g) were the most accepted and organoleptically acceptable mango pickles due to their elevated acidity, sugar content, and overall acceptability.

Keywords: Mango Pickle, Recipe, Genotypes, TSS, Total sugar, Ascorbic acid, Titratable acidity, pH, Reducing sugar, non-reducing sugar, Moisture.

Introduction

Mango (*Mangifera Indica* Linn.) fruit is wildly popular throughout the world. With an annual output of around 10.99 million tonnes, India is the world's largest producer (accounting for 57.18% of total output). Total area of mango under cultivation in India is 2.325 million ha with 208.22 million tonnes production (ICAR Data Book, 2022). Mango acknowledges as “King of fruit” due to its sweet aroma and delectable flavour, whereas fruit and leaves contain a variety of polyphenolic antioxidants and micronutrients, including mangiferin, beta-carotene, lutein, zeaxanthin, riboflavin, thiamine, niacin, anthocyanins and anthocyanidins, flavonoids, alkaloids, and minerals, according to chemical studies (Pal, 1988; Singh *et al.*, 2000; Swaroop *et al.,* 2018) [(16)]. Its gaining in popularity due to their therapeutic properties, which include the treatment of diabetes, blood pressure, restlessness, respiratory problems, gall bladder and kidney stones, dysentery, earaches, diverse inflammatory responses, wound-healing, heat stroke, and various gastrointestinal disorders. Literature reveals that mango fruits and leaves have been used in Ayurvedic medicine for thousands of years to treat a variety of health problems and maladies, particularly digestive and gastrointestinal health. Mangoes are commonly used in salads and pickles, while mature mangoes are consumed as fruits, smoothies, and desserts. Mango pickle is by far the most popular and it can be preserved with oil, vinegar, citrus juice, or brine. There are

78 calories, 0.2 grammes of protein, 18.5 grammes of carbs, 0.3 grammes of fibre, and 0.4 grammes of fat in only one tablespoon of mango pickles. Acetic acid, which is included in pickles, serves as a preservative to keep them fresh for longer (Shannon Rezac et al., 2018). The vitamin C in mango pickles helps the human body fight against illness and absorb more iron. The fibre in mango prevents constipation, while its antioxidants eliminate free radicals, prevent cell damage and cancer, and regulate blood sugar (Dalal, 2019).

2. Material and methods

Three different locations in Akola were scouted for their ripe, green mangoes with white flesh, and then brought to the Department of Fruit Science at Dr. Panjabrao Deshmukh Krishi Vidyapeeth to be sorted for any signs of injury or disease. The fruit was washed in water and dried with muslin cloth to remove any dirt or dust. Three genotypes were used to standardize four different mango pickle recipes. At 0, 30, 60, 90, 120, and 150 days, pickles made with various recipes were assessed for their physicochemical composition, including Total soluble solids (TSS), titratable acidity percent (TAP), ascorbic acid mg per 100 g (mg/100 g), moisture percentage (%) (Ranganna, 1997) [(10)], and pH (CRISON Instrument, Ltd, Spain) (Dubois method). Using a "Factorial completely randomized design," the experiment was set up with two factors: the three genotypes (Galu, Shravanya, and Telya) and the four recipes (Recipe-1, Recipe-2 (Recipe-1 + niger seed 150 g), Recipe-3 (Recipe-1 + garlic 200 g), and Recipe-4 (Recipe-1 + niger seed 150 g + garlic 200 g) and replicated thrice.

Recipes details: Four recipes for mango pickle were standardized. Fruits of 1 kg were cut into small pieces of about 1 x 0.75 x 0.5 cm size.

Table 1. Different recipes of mango pickle.

Sr. No.	Ingredients	Recipe I	Recipe II	Recipe III	Recipe IV
1.	Unripe mango flakes	1 kg	1 kg	1 kg	1 kg
2.	Oil (ml)	250	250	250	250
3.	Salt (g)	250	250	250	250
4.	Mustard dal (g)	100	100	100	100
5.	Clove (g)	10	10	10	10
6.	Black pepper (g)	10	10	10	10
7.	Cumin powder (g)	20	20	20	20
8.	Asafetida (g)	5	5	5	5
9.	Fennel (g)	100	100	100	100
10.	Cardamom (g)	5	5	5	5
11.	Fenugreek seed (g)	5	5	5	5
12.	Chili powder (g)	20	20	20	20
13.	Turmeric powder (g)	10	10	10	10

14.	Coriander powder (g)	20	20	20	20
15.	Niger seed (g)	-	150	-	150
16.	Garlic (g)	-	-	200	200

Procedure for pickle making

Prior to sorting the chosen mango, totally cleaned with tap water. For the manufacture of pickle, the mangoes were cleaned with a cotton towel and cut into the desired size flakes, measuring about 1 × 0.75 × 0.5 cm. The white flakes were dried in the shade for approximately three to four hours. Until then, make the pickle's masala. Bring the oil up to 60 ℃. The fennel, clove, black pepper, and cardamom powder were prepared (preparation in flow chart). Made the oil lukewarm and added the pickling components, including asafetida, fenugreek seeds, Niger seed coarse powder, chilli powder, turmeric powder, salt, coriander, cumin, and the powders of clove, black pepper, cardamom, and mustard dal, along with garlic, according to the instructions. Stirred and blended well. As the mixture cooled, mango chunks measuring 1 x 0.75 x 0.5 cm were added, mixed well, and then kept in a dry earthenware pot according to the guidelines. The plate and pot were wrapped with muslin fabric and kept at room temperature and in a clean location. The earthenware was held at ambient temperature for up to 150 days to assess chemical changes and sensory attributes every 30 days.

Flowchart of mango pickle preparation -

Selection of fruits for pickle

⇩

Washing, Cleaning and Grading

⇩

Make flakes for pickle about 1 x 0.75 x 0.5 cm size.

⇩

Dry the flakes for 3-4 hours in shadow.

⇩

Make powder of all ingredients.

⇩

Heat oil till 60ºC

⇩

Add asafetida, fenugreek seeds and Niger seeds coarse powder or garlic flakes in lukewarm oil.

⇩

Add powder of chili, turmeric, salt, coriander, cumin and the powder of clove, black pepper, cardamom and mustard dal.

⇩

Mix it well and as the whole mixture is cool down.

⇩

Add 1 kg mango flakes (about 1 x 0.75 x 0.5 cm size) to it and mix it well.

⇩

Fill it in dry mud pot and cover the pot with muslin cloth.

⇩

Keep it in a cool and hygienic place.

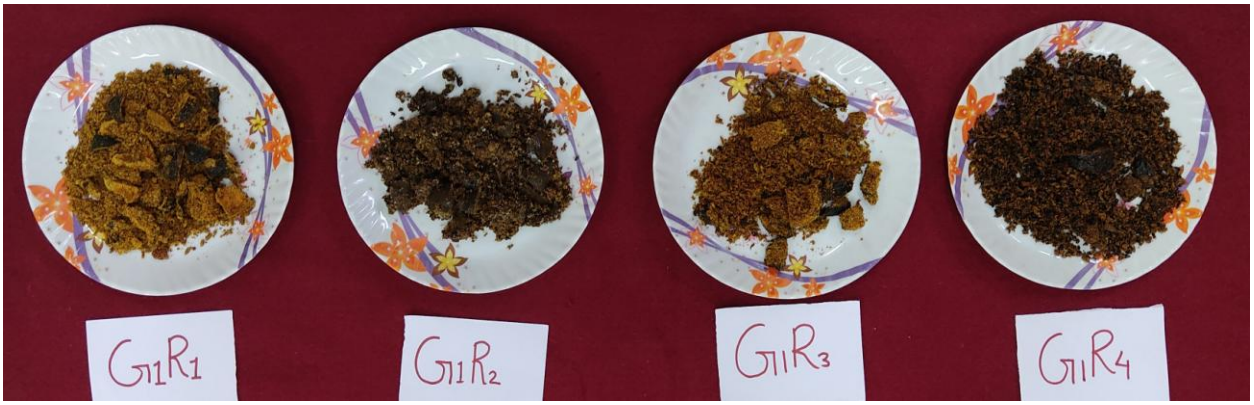

Fig. – 1. Mango pickle of genotype-1 (Galu) and recipe-I, II, III and IV after 150 days of storage

Fig. – 2. Mango pickle of genotype-2 (Shravnya) and recipe-I, II, III and IV after 150 days of storage

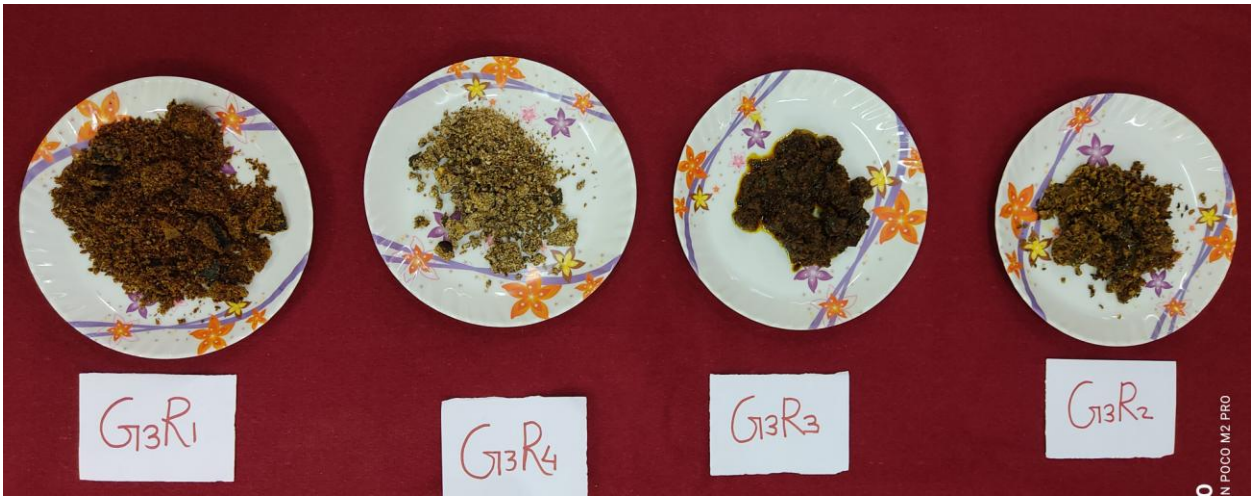

Fig. – 3. Mango pickle of genotype-3 (Telya) and recipe-I, II, III and IV after 150 days of storage

3. Results and discussion

3.1 TSS (^{0}B): The data in Table 2 exhibited significant differences in TSS content of mango pickle due to mango genotype and recipes at 150th days of storage.

3.1.1. Effect of genotypes: In general, the TSS of mango pickle increased in all genotypes. A significant minimum TSS was observed in Genotype-1 (Galu) i.e., from 2.78 ^{0}B to 4.42 ^{0}B at 30 to 150 days of storage. However, maximum TSS was increased in Genotype-3 (Telya) i.e., from 3.20 ^{0}B to 4.72 ^{0}B at 30 to 150 days of storage.

3.1.2. Effect of Recipes: In general, the TSS of mango pickle increased in all four recipes. A significant minimum increase in TSS i.e., from 2.21 to 3.90 ^{0}B was recorded in Recipe-4. However, significantly maximum increase in TSS was observed in Recipe-4 (Recipe-1 + niger seed 150 g + garlic 200 g) i.e., from 3.76 to 5.29 ^{0}B in mango pickle during 30 to 150 days of storage.

3.1.3 Interaction: The data present in table 4 exhibited significant differences in TSS content of mango pickle due to interaction effect of genotypes and recipes of mango pickle during 30 to 150 days of storage. Maximum TSS was recorded in mango pickle prepared from genotype-3 (Telya) by using recipe-4 (Recipe-1 + niger seed 150 g + garlic 200 g) i.e., treatment T_{12} while minimum TSS in mango pickle prepared from genotype-1 (Galu) by using recipe-1. TSS was increase might be due to the increasing in total sugar and reducing sugar during storage. Increase in sugar might be due to conversion of polysaccharide into monosaccharide & hydrolysis of starch into sugar & conversion of acids into sugar Gupta (1998) [(4)]. Similar results with rapid increase in

TSS were reported by Shinde *et al.,* (2004) [14] & Madhumati and Reddy (2020) [6] in mango pickle.

3.2 Titratable acidity (%): The data present in table 2 exhibited a significant increase in Titratable acidity content of mango pickle due to interaction effect of genotypes and recipes of mango pickle during 30 to 150 days of storage.

3.2.1. Effect of genotypes: In general, the titratable acidity (%) of mango pickle increased in all genotypes. Significantly lowest increase in titratable acidity was observed in Genotype-1 (Galu) i.e., from 2.70 % to 3.42 % at 30 to 150 days of storage. However, the highest increase in titratable acidity per cent was found in Genotype-3 (Telya) i.e., from 2.96 % to 3.71 % at 30 to 150 days of storage.

3.2.2. Effect of Recipes: In general, the titratable acidity % of mango pickle increased in all four recipes. A significant minimum increase in titratable acidity % i.e., from 2.25 to 3.09 % was recorded in Recipe-1. However, significantly maximum increase in titratable acidity % was observed in Recipe-4 (Recipe-1 + niger seed 150 g + garlic 200 g) i.e., from 3.37 to 4.05 % in mango pickle during 30 to 150 days of storage.

3.2.3 Interaction: The data present in table 4 exhibited significant differences in titratable acidity % content of mango pickle due to interaction effect of genotypes and recipes of mango pickle during 30 to 150 days of storage. Highest titratable acidity % was recorded in mango pickle prepared from genotype-3 (Telya) by using recipe-4 (Recipe-1 + niger seed 150 g + garlic 200 g) i.e., from 3.37 to 4.29 %, while minimum titratable acidity % was recorded in mango pickle prepared from genotype-1 (Galu) by using recipe-1 i.e., from 2.13 to 2.93 %. Acidity increases in pickles might be due to lactic acid fermentation; fermentation has been known to decrease pH and increase acidity in several foods (Gupta 1998) [4]. The above results are in conformity with Sastry *et al.,* (1975) [13] who reported 2.0 to 2.2 per cent acidity during six weeks of storage in mango pickle.

3.3 Total Sugar (%): Data pertaining to total sugar in mango pickle as influenced by genotypes and recipes was recorded at five months of storage period at monthly interval are presented in table 2.

3.3.1. Genotypes: Total sugar content of mango pickle increased in all genotypes. Significantly lowest increase in total sugar content was observed in Genotype-1 (Galu) i.e., from 4.90 % to 6.94 % at 30 to 150 days of storage. However, the highest increase in total sugar per cent was found in Genotype-3 (Telya) i.e., from 5.29 % to 7.35 % at 30 to 150 days of storage.

3.3.2. Recipes: In general, Total sugar content of mango pickle increased in all four recipes. A significant minimum increment in total sugar content i.e., from 4.25 to 6.23 % was recorded in Recipe-1. However, significantly maximum increment in total sugar content was observed in Recipe-4 (Recipe-1 + niger seed 150 g + garlic 200 g) i.e., from 5.82 to 8.23 % in mango pickle during 30 to 150 days of storage.

3.3.3. Interaction: There was a non-significant difference found in total sugar content due to interaction effect of genotypes and recipes of mango pickle during 150 days of storage. Maximum total sugar i.e., 8.43 per cent in pickle of genotype-3 (Telya) by using recipe-4 (Recipe-1 + niger seed 150 g + garlic 200 g) while minimum increment i.e., 6.04 per cent in mango pickle of genotype-1 (Galu) by using recipe-1 at 150 days of storage. These results are conformity with the results of Thakur *et al.,* (2017) [16] in seedling mango pickle and Singh *et al.,* (2018) [12] in 90 days storage of mango pickle. Increase in sugar might be due to conversion of polysaccharide into monosaccharide & hydrolysis of starch into sugar & conversion of acids into sugar Gupta (1998) [4].

3.4 Reducing Sugar (%):

3.4.1. Genotypes: Reducing sugar content of mango pickle increased in all genotypes. Significantly lowest increase in total sugar content was observed in Genotype-1 (Galu) i.e. from 4.90 % to 6.94 % at 30 to 150 days of storage. However, highest increase in total sugar per cent was found in Genotype-3 (Telya) i.e. from 5.29 % to 7.35 % at 30 to 150 days of storage.

3.4.2. Recipes: There was an increasing trend found in reducing sugar in mango pickle recipes. Highest reducing sugar i.e. from 4.54 to 5.55 % were recorded at 30^{th} to 150^{th} days of storage, respectively in recipe-4 (Recipe-1 + niger seed 150 g + garlic 200 g), while in recipe-1 recorded lowest reducing sugar i.e., from 2.86 to 3.96 % were recorded at 30^{th} to 150^{th} days of storage, respectively.

3.4.3. Interaction: Due to the interaction impact of mango pickle genotypes and recipes, a rising tendency in reducing sugar was found during the storage period. Highest reducing sugar i.e., 5.73 per cent in pickle of genotype-3 (Telya) by using recipe-4 (Recipe-1 + niger seed 150 g + garlic 200 g) at 150 days of storage. While minimum reducing sugar i.e., 3.75 per cent in mango pickle of genotype-1 (Galu) by using recipe-1 at 150 days of storage. Increase in sugar might be due to conversion of polysaccharide into monosaccharide & hydrolysis of starch into sugar & conversion of acids into sugar Gupta (1998) [4], Aruna *et al.,* (1997) [1]. The same result was found by Verma *et al.,* (1986) [17], who recorded that the sharp increase in reducing sugar from

2.39 to 2.71 per cent in mango pickle during 6 months storage. Similar results were found by Thakur *et al.,* (2017) [16], who found that the reducing sugars of seedling mango pickle ranged from 2.37 to 3.83 per cent. The same result was also observed by Singh *et al.,* (2018) [12] who reported that increasing trend of reducing sugar in different recipes of mango pickle during 90 days of storage.

3.5. Non reducing Sugar (%):

3.5.1. Genotypes: Increasing trend was observed in non-reducing sugar during the storage period in mango pickle genotypes. At 150 days of storage mango pickle prepared from genotype-1 (Galu) was found numerically highest non-reducing sugar 2.33 per cent while genotype-3 (Telya) was observed numerically lowest non-reducing sugar 2.32 per cent.

3.5.2. Recipes: After the storage of mango pickle, the non-reducing sugar of all the treatments increased. At 150 days of storage mango pickle prepared from Recipe-4 was found highest non-reducing sugar i.e., 2.67 per cent while Recipe-3 was observed lowest non-reducing sugar i.e., 2.15 per cent.

3.5.3. Interaction: Due to the interaction impact of mango pickle genotypes and recipes the non-reducing sugar of mango pickle was increased significantly during 150 days of storage. Maximum non-reducing sugar i.e., 2.69 per cent in pickle of genotype-3 (Telya) by using recipe-4 (Recipe-1 + niger seed 150 g + garlic 200 g) while minimum non-reducing i.e., 2.30 per cent in mango pickle of genotype-1 (Galu) by using recipe-1. Increase in non-reducing sugar might be due to increase in total sugar and reducing sugar. The same result was found by Singh and Bana, (1976) [15] who reported the non-reducing sugar as 5.6 percent in the Dashehari and 3.2 percent in the Desi cultivar of mango. Similar results were found by Chawla *et al.,* (2005) [3] who reported decreasing trend of non-reducing sugar in carrot pickle during storage.

3.6. pH:

3.6.1. Genotypes: Decreasing trend of pH was observed in mango pickle during storage. At 150 days of storage maximum pH was found in Genotype-3 (Telya) i.e., 3.47 while minimum pH in Genotype-1 (Galu) i.e., 3.14 after 150 days of storage.

3.6.2. Recipes: In mango pickle recipes, a decreasing trend in pH was noticed during the storage period. The highest pH i.e., 3.93 was recorded in Recipe-4 (Recipe-1 + niger seed 150 g + garlic 200 g) while minimum pH i.e., 2.72 was observed in Recipe-1.

3.6.3. Interaction: Due to combined effect of Genotypes and Recipes pH of mango pickle was significantly decreased day by day during 150 days of storage. Highest value of pH was found in

pickle of genotype-3 (Telya) by using recipe-4 (Recipe-1 + niger seed 150 g + garlic 200 g) i.e., 3.95 while lowest pH value i.e., 2.63 in mango pickle of genotype-1 (Galu) by using recipe-1. Decrease in pH might be due to increase in acidity. Acidity increases in pickles due to lactic acid fermentation; fermentation has been known to decrease in pH. Similar result was found by Sastry *et al.,* (1975) [13], who recorded that is the 3.5 pH. The same results were also found by Singh *et al.,* (2018) [12], who reported that the decreasing trend of pH of mango pickle of different recipes during 90 days of storage.

3.7 Ascorbic acid content (mg/100 g):

3.7.1. Genotypes: Ascorbic acid content of mango pickle was decreased due to different mango genotypes. Highest 12.77 mg/100g ascorbic acid was reported in Genotype-3 (Telya) while lowest in Genotype-1(Galu) i.e., 10.98 mg/100g.

3.7.2. Recipes: In general, the Ascorbic acid content of mango pickle decreased in all four recipes. Significantly minimum ascorbic acid content i.e. 9.33 mg/100g were recorded in Recipe-1. However, significantly maximum ascorbic acid content was observed in Recipe-4 (Recipe-1 + niger seed 150 g + garlic 200 g) i.e. 15.39 mg/100g in mango pickle during 150 days of storage.

3.7.3. Interaction: Decreasing trend was observed in ascorbic acid during the storage period due to interaction effect of mango genotypes and recipes. Mango pickle prepared from genotype-3 (Telya) by using recipe-4 (Recipe-1 + niger seed 150g + garlic 200g) i.e., treatment T_{12} recorded maximum ascorbic acid content i.e., 16.13 mg/100g while minimum ascorbic acid content 7.28 mg/100g was recorded in genotype-1 (Galu) by using recipe-1. Ascorbic acid content decreased continuously in all the pickles during the entire storage period. This loss of ascorbic acid content might be due to the leaching loss by the osmotic action of added salt & sugar and its conversions into dihydro ascorbic acid by oxidation, as saline solution enhances rate of oxidation of ascorbic acid Premi *et al.,* (2002) [8]. The same results were also found by Thakur *et al.,* (2017) [16], who recorded that the ascorbic acid content ranged from 20.37 to 45.89 (mg/100g). The same results were also found by Singh *et al.,* (2018) [12], who reported that the decreasing trend of ascorbic acid content of mango pickle of different recipes.

3.8 Moisture (%):

3.8.1. Genotypes: Decreasing trend was observed in moisture content during the storage period in mango pickle genotype due to addition of more salts and increasing sugar content which cause osmosis. Maximum moisture contents 45.24 per cent were recorded in mango pickle genotype-3 (Telya) at 150th days of storage. while minimum moisture content 43.53 per cent were recorded

in mango pickle genotype-1 (Galu) at 150 days of storage.

3.8.2. Recipes: In general, the moisture content of mango pickle decreased in all four recipes. minimum moisture content i.e., 41.72 per cent was recorded in Recipe-1. However, maximum moisture content 47.59 per cent was observed in Recipe-4 (Recipe-1 + niger seed 150 g + garlic 200 g) i.e. from 3.37 to 4.05 % in mango pickle during 30 to 150 days of storage.

3.8.3. Interaction: Decreasing trend was observed in moisture content during the storage period due to interaction effect of mango genotypes and recipes. Mango pickle prepared from genotype-3 (Telya) by using recipe-4 (Recipe-1 + niger seed 150 g + garlic 200 g) i.e., treatment T_{12} recorded maximum moisture content 49.16 per cent while mango pickle prepared from genotype-1 (Galu) by using recipe-1 recorded minimum moisture content 41.21 per cent at 150th days of storage. Kalra and Tandon (1983) [5] concluded that the reduction in moisture content was due to addition of more salt & sugar, which causes osmosis. The same results were also found by Singh *et al.*, (2018) [12], who reported that the decreasing moisture content of mango pickle of different recipes.

Table 2. Effect of different genotypes on chemical properties of mango pickle after 150 days of storage.

Genotype	TSS	Titratable acidity (%)	Total sugar (%)	Reducing sugar (%)	Non-reducing sugar (%)	pH	Ascorbic acid (mg/100g^{-1})	Moisture (%)
Genotype-1	4.42	3.42	6.94	4.61	2.33	3.14	10.98	43.53
Genotype-2	4.54	3.49	7.15	4.82	2.33	3.36	12.01	44.33
Genotype-3	4.72	3.71	7.35	5.04	2.32	3.47	12.77	45.24
F test	**Sig.**	**Sig.**	**Sig.**	**Sig.**	**NS**	**Sig.**	**Sig.**	**Sig.**
SE (m)±	0.01	0.01	0.02	0.06	0.01	0.02	0.02	0.02
CD at 1 %	0.03	0.04	0.06	0.19	-	0.06	0.06	0.06

Table 3. Effect of different recipes on chemical properties of mango pickle after 150 days of storage.

Recipes	TSS	Titratable acidity (%)	Total sugar (%)	Reducing sugar (%)	Non-reducing sugar (%)	pH	Ascorbic acid (mg/100g^{-1})	Moisture (%)
Recipe-1	3.90	3.09	6.23	3.96	2.27	2.72	9.33	41.72
Recipe-2	4.33	3.42	6.82	4.60	2.23	3.09	10.65	42.68

Recipe-3	4.73	3.61	7.31	5.17	2.15	3.55	13.24	45.47
Recipe-4	5.29	4.05	8.23	5.55	2.67	3.93	15.39	47.59
F test	**Sig.**	**Sig.**	**Sig.**	**Sig.**	**Sig.**	**Sig.**	**Sig.**	**Sig.**
SE (m)±	0.01	0.01	0.02	0.07	0.01	0.02	0.02	0.02
CD at 1 %	0.034	0.04	0.07	0.22	0.04	0.07	0.07	0.07

Table 4. Interaction effect of different genotypes and recipes on chemical properties of mango pickle after 150 days of storage.

Treatments (G x R)	**TSS**	**Titratable acidity (%)**	**Total sugar (%)**	**Reducing sugar (%)**	**Non-reducing sugar (%)**	**pH**	**Ascorbic acid content (mg/100g^{-1})**	**Moisture content (%)**
G_1R_1	3.80	2.93	6.04	3.75	2.30	2.63	7.28	41.21
G_1R_2	4.20	3.33	6.64	4.28	2.36	2.88	9.69	42.33
G_1R_3	4.59	3.56	7.07	5.02	2.05	3.23	12.54	44.11
G_1R_4	5.10	3.85	8.01	5.38	2.63	3.82	14.39	46.47
G_2R_1	3.90	3.06	6.24	3.98	2.24	2.73	8.55	41.72
G_2R_2	4.29	3.40	6.88	4.57	2.30	3.13	10.80	42.62
G_2R_3	4.70	3.67	7.25	5.18	2.10	3.61	13.03	45.84
G_2R_4	5.29	4.03	8.24	5.54	2.69	3.95	15.64	47.13
G_3R_1	4.00	3.29	6.41	4.15	2.27	2.80	9.33	42.22
G_3R_2	4.50	3.53	6.95	4.95	2.02	3.27	11.47	43.10
G_3R_3	4.89	3.74	7.59	5.32	2.30	3.61	14.15	46.46
G_3R_4	5.50	4.29	8.43	5.73	2.69	3.95	16.13	49.16
F test	**Sig.**	**Sig.**	**NS**	**NS**	**Sig.**	**Sig.**	**Sig.**	**Sig.**
SE (m)±	0.02	0.02	0.04	0.13	0.02	0.04	0.04	0.04
CD at 1 %	0.05	0.07	-	-	0.07	0.12	0.12	0.12

4. Conclusion

Based on the current data, one can draw the conclusion that the mango pickle that was made using a variety of genotypes and recipes and then kept at an ambient temperature for a period of 150 days was found to have a high level of acceptance in terms of the various chemical characteristics. The mango pickle that had been created using Genotype-3 (Telya) and Recipe-4

(Recipe-1 with 150 g of niger seed and 200 g of garlic) and had been aged for 150 days was noted to be superior to the rest of the treatments.

5. References

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