



E-ISSN: 2278-4136
P-ISSN: 2349-8234
JPP 2018; 7(6): 772-774
Received: 21-09-2018
Accepted: 22-10-2018

Romila Xess

M.Sc. Horticulture Fruit Science,
Department of fruit Science
College of Agriculture IGKV
Raipur Chhattisgarh, India

Prabhakar Singh

Professor and Head Department
of fruit Science College of
Agriculture IGKV Raipur
Chhattisgarh, India

Dhanita Patel

M.Sc. Horticulture Fruit Science,
Department of fruit Science
College of Agriculture IGKV
Raipur Chhattisgarh, India

Yogendra Singh

M.Sc. Horticulture Fruit Science,
Department of fruit Science
College of Agriculture IGKV
Raipur Chhattisgarh, India

Correspondence**Romila Xess**

M.Sc. Horticulture Fruit Science,
Department of fruit Science
College of Agriculture IGKV
Raipur Chhattisgarh, India

Evaluation of mango (*Mangifera indica* L.) varieties for processing of nectar beverage on organoleptic parameters

Romila Xess, Prabhakar Singh, Dhanita Patel and Yogendra Singh

Abstract

The present investigation was undertaken to evaluate ten cultivars of mango for preparation of nectar on the basis of organoleptic parameters. The ten varieties of mango viz., Amrapali, Amin, Chausa, Dashehari, Kakna, Krishn bhog, Langra, Mallika, Sundri and Totapari were laid in CRD design with three replications. Organoleptic evaluation with respect to colour and appearance, aroma, taste and overall acceptability were carried out periodically during 90 days of storage. Looking to the organoleptic evaluation of all varieties in respect to overall acceptability, Totapari was found best. While lower acceptability was found in nectar of Dashehari variety, which was found decreased during period of storage.

Keywords: Amrapali, Amin, Chausa, Dashehari, Kakna, Krishn Bhog, Langra, Mallika, Sundri and Totapari

Introduction

Mango (*Mangifera indica*) is the most popular tropical fruit and is very much relished for its succulence, exotic flavours and delicious taste throughout the world. Apart from its delicacy, it is highly important, because it has medium calorific value and high nutritional values. Mango helps to prevent many deficiency diseases because it is a rich source of vitamins, minerals, acid, total soluble solids. India ranks first in the world mango production with a share of about 51% (Nigam *et al.*, 2007) [8].

Fruit juice and beverages hold an important position due to their richness in essential minerals, vitamins and other nutritive constituents. Being delicious and appealing they have great demand and are appreciated by people of all age groups. Synthetic drinks which are more popular commercially are not so healthy or nutritive compared to natural once. Hence, if natural drinks could substitute synthetic drinks, it would provide numerous benefits to consumers as well as farmers. In view of the rising demands for natural and organic products, fruit juice and other fruit based beverages have great scope.

Nectar is one of the refreshing beverages having zero carbonation, relatively few preservatives and excellent source of several important vitamins and minerals and is used as health drink. Therefore, it is necessary to utilize mango for making nutritious processed health food like nectar to increase availability over an extended period and to stabilize the price during the glut season. As large quantities of this valuable fruit are wasted during peak harvest season due to limited storage life, it is important to prepare such products, which can be preserved for longer time at ambient temperature.

Materials and Methods

The present investigation was conducted in the Horticulture Processing Laboratory Department of Fruit Science, College of Agriculture, Indira Gandhi Agricultural University, Raipur (C.G.) during the year 2017-18. Total ten varieties were studied Amrapali, Amin, Chausa, Dashehari, Kakna, Krishn bhog, Langra, Mallika, Sundri and Totapari. Mature mangoes were washed in running tap water to remove dirt and dust particles. They were sliced into small pieces. The fruits were then cooked in boiling water for 15min. The cooked fruits were peeled manually and carefully to minimize pulp loss with the peels. The pulping was done using the domestic mixer grinder and the stone was collected separately. The beverage contained 20 percent pulp. The volume of the final product was maintained by adding water to each recipe combination in each replication. A calculated amount of sugar was added in the pulp to adjust the total soluble solids as 18 percent in the recipe for nectar. The acidity was maintained to 0.3 percent in the final product by the addition of required amount of citric acid.

The product was poured into hot, sterilized crown bottles of 200 ml capacity and corked air-tight. The filled bottles were pasteurized in boiling water till the temperature of product reaches 100°C. It took about 15 minutes to attain required temperature. The bottles of nectar beverages were kept at ambient condition for further studies up to 90 days.

Table 1: Effects of various treatments on colour and appearance, aroma and taste of mango nectar during storage

S.N.	Treatments	Colour & appearance				Aroma				Taste			
		0 DAT	30 DAT	60 DAT	90 DAT	0 DAT	30 DAT	60 DAT	90 DAT	0 DAT	30 DAT	60 DAT	90 DAT
1	Amrapali	8.11	7.73	7.08	6.26	7.87	7.43	6.82	6.21	7.84	7.3	6.75	5.95
2	Amin	7.59	7.03	6.41	5.65	7.95	7.49	6.77	6.26	8.24	7.69	7.11	6.26
3	Chausa	7.26	6.91	6.37	5.2	6.69	6.28	5.65	5.04	6.23	5.69	5.13	4.31
4	Dashehari	7.75	7.23	6.6	5.78	7.87	7.45	6.81	6.19	6.16	5.62	5.12	4.3
5	Kakna	7.8	7.35	6.72	5.96	7.69	7.25	6.58	5.78	7.46	6.94	6.37	5.51
6	krishn bhog	8.34	7.84	7.32	6.59	7.85	7.43	6.71	5.66	8.12	7.59	7.02	6.16
7	Langra	7.71	7.2	6.57	5.78	7.64	7.19	6.5	5.98	7.33	6.92	6.34	5.46
8	Mallika	8.45	8.02	7.5	6.66	7.93	7.49	6.8	5.63	8.28	7.77	7.17	6.29
9	Sundri	8.19	7.8	7.18	6.41	7.8	7.37	6.65	5.42	8	7.52	6.95	6.06
10	Totapari	7.57	7.16	6.55	5.8	8.2	7.77	7.02	6.27	8.5	7.98	7.37	6.53
	SEM±	0.019	0.026	0.026	0.019	0.033	0.006	0.026	0.006	0.026	0.019	0.006	0.006
	CD at 5%	0.06	0.12	0.12	0.06	0.1	0.02	0.12	0.02	0.12	0.06	0.02	0.02

DAT=Days After treatments

Colour and appearance

At the time of preparation, significantly maximum value for colour and appearance was recorded (8.45) with the treatment T8 (Mallika) followed by T6 (Krishn bhog). The minimum mean score was recorded (7.26) with the treatment T3 (Chausa). The treatments T5, T4, and T7, T2 and T10, were statistically similar. After 30 days of storage, significantly maximum mean score for colour and appearance was recorded (8.02) with the treatment T8 (Mallika) followed by T6 (Krishn bhog). The minimum mean score was recorded (6.91) with the treatment T3 (Chausa). The treatments T4 and T7 were found significantly at par. After 60 to 90 days of storage, similar trend was observed. The colour and appearances showed discoloration. Similar findings were also reported by Kalra & Tandon (1991) [4] for mango-papaya blended beverages, Chakraborty *et al.* (1991) [1] for canned mango nectar. Pandey (2004) [9] for guava beverages decreasing trend during storage which might be due to the action of acidity which enhances the hydrolytic reaction causes browning and acid also enhances the millard reaction and caramelization which causes more browning in product. Polyphenolic compound present in fruit pulp also reacts with enzymes to get, Mall and Tondon (2007) [7] for guava aonla blended beverage, Kumar *et al.* (2008) [6] for musambi RTS Beverage.

Aroma

At the time of preparation the maximum value for aroma score was recorded (8.20) with the treatment T10 (Totapari) followed by T2 (Amin). The minimum mean score was recorded (6.69) with the treatment T3 (Chausa). The treatments T1 and T4, T5 and T7 were found statistically at par. After 30 days of storage, the maximum mean score for aroma was recorded (7.77) with the treatment T10 (Totapari) followed by T2 (Amin). The minimum mean score was recorded (6.28) with the treatment T3 (Chausa). The treatments T4 and T6, and T2 and T8 were found significantly at par. After 60 to 90 days of storage, similar trend was observed. The results are in good agreement with the finding of Gehlot *et al.* (2008) [3] who reported that the aroma of

Results and discussion

The data on changes in colour and appearance, aroma and taste was affected by various treatments during the storage has been presented in Table 1.

jamun beverages decreased significantly with the advancement in storage period.

Taste

Maximum value for taste score was recorded (8.50) with the treatment T10 (Totapari) followed by T8 (Mallika). The minimum mean score was observed (6.16) with the treatment T4 (Dashehari). The treatments T2 and T8, were statistically at par. After 30 days of storage the maximum mean score for taste was recorded (7.98) with the treatment T10 (Totapari) followed by T8 (Mallika). The significantly minimum mean score was recorded (5.62) with the treatment T4 (Dashehari). The treatments T5 and T7 were showed significantly similar differences. After 60 to 90 days of storage, similar trend was observed. There are many extrinsic factors which determine the storage stability of products and temperature plays an important role among them. There are certain biochemical changes which occurs under low pH and high temperature that leads to the formation of brown pigments and produces off flavour in the beverages. The other possible reasons could be the loss of volatile aromatic substances responsible for flavour and taste which decreased acceptability in storage at ambient condition. The present findings are in accordance with the view of Gehlot *et al.* (2008) [3] who reported that the colour and appearance, flavour, taste and overall acceptability of jamun beverages decreased significantly with the advancement in storage period.

Overall acceptability

Data pertaining to change in overall acceptability score of nectar during storage under ambient storage condition are presented in Table 2.

At the time of preparation, the maximum value for overall acceptability score was recorded (8.33) with the treatment T10 (Totapari) followed by T8 (Mallika). The minimum mean score was recorded (6.70) with the treatment T4 (Dashehari). The treatments T6 and T9 were statistically at par. After 30 days maximum mean score for overall acceptability was recorded (7.87), with the treatment T10 (Totapari) followed by T8 (Mallika). The significantly minimum mean score was recorded (6.26) with the treatment

T4 (Dashehari). Treatments T7 and T5 were found significantly at par. After 60 to 90 days of storage, similar trend was observed. The reason for rejection is poor colour, appearance, aroma and taste. Higher temperature is the factor that affected each sensory parameter during storage, though the degree of effect was slow under refrigerated condition. Formation of brown pigment might be responsible for deterioration of colour and appearance of product. Production of off-flavour adversely affects taste and aroma of product. There are certain enzymatic, physiological or biochemical changes, which result in production off flavour. Off-flavour plays major role in acceptance or rejection of product. Temperature plays important role in production of off flavour. This is reason that nectars stored under ambient condition produce off flavour earlier as compared to nectars stored under refrigerated condition, which finally results in their rejection. Similar reaction in organoleptic quality of various fruit products were reported by Roy and Singh (1979) in bael fruit product, Khurdiya and Roy (1984) ^[5] in jamun beverages, Dube (1984) ^[2] in bael beverages, Ram (1984) ^[10] in aonla beverages.

4. Kalra SK, Tandon DK, Singh BP. Evaluation of mango-papaya blended beverage, Indian Fd. Pack. 1991; 45:33-36.
5. Khurdiya DS, Roy SK. Anthocyanin a quality index in Jamun beverages. Indian Fd Pack. 1984; 38(6):71-76.
6. Kumar K, Sharma A, Barmanray A. Storage stability of musambi (*Citrus sinensis*) RTS Beverages in different storage conditions. Beverages and food Beverages World. 2008; 35:47-48.
7. Mall P, Tondon DK. Development of guava-aonla blended beverage. Acta Horticulturae. 2007; 735:555-560.
8. Nigam S, Bhatt DK, Jha A. Processed Food Industry. 2007; 10(9):32-40.
9. Pandey AK. Study about the storage stability of guava beverages. Prog. Hort. 2004; 36(1):142-145.
10. Ram B. Studies on processing and preservation aonla (*Emblca officnalis*) beverages. M.Sc. thesis, N.D. Univ. of Agric. and Tech. Faizabad, 1984.

Table 2: Effects of various treatments on overall acceptability score of mango nectar during storage

Treatments	Overall acceptability				
	0 DAT	0 DAT	30 DAT	60DAT	90DAT
Amrapali	8.11	7.94	7.49	6.8	6.11
Amin	7.59	8.19	7.71	7.08	6.29
Chausa	7.26	6.81	6.63	5.76	5.3
Dashehari	7.75	6.7	6.26	5.64	5.21
Kakna	7.8	7.65	7.18	6.51	5.7
krishn bhog	8.34	8.06	7.52	6.95	6.12
Langra	7.71	7.56	7.12	6.49	5.61
Mallika	8.45	8.24	7.76	7.13	6.32
Sundri	8.19	8.02	7.58	6.94	6.11
Totapari	7.57	8.33	7.87	7.25	6.38
SEm±	0.019	0.019	0.006	0.006	0.026
CD at 5%	0.06	0.06	0.02	0.02	0.12

DAT=Days After treatments

Conclusion

The evaluation of mango nectar product processing processed from different mango varieties viz., Amrapali, Amin, Chausa, Dashehari, Kakna, Krishn bhog, Langra, Mallika, Sundri and Totapari varieties with respect to status of nectar in organoleptic parameters viz., colour and appearance, aroma, taste and overall acceptability was higher in mango nectar of Totapari varieties at 0 to 90 days of storage. From above it can be concluded that among different mango varieties, Totapari should be preferred for nectar processing.

Reference

1. Chakraborty S, Bisht HC, Agarwal MD, Verma LN, Shukla IC. Studies on varietal screening of mangoes of Uttar Pradesh for their suitability for production of canned nectar, Juice and pulp. Indian Fd. Pack. 1991; 55:49-57.
2. Dube KP. Studies on preparation and preservation of bael (*Aegle marmelos* Corr.) beverages. M.Sc. thesis, N.D. Univ. of Agril. And Tech. Faizabad, UP, 1984.
3. Gehlot SR, Singh R, Yadav BS. Studies on development and quality evaluation of jamun (*Syzygium cumini* L.) ready-to-serve (RTS) drink and nectar during storage. Haryana J. Hort. Sci. 2008; 37(1/2):73-75.