

Research Paper

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Sensory evaluation of mangoes (*Mangifera indica* L.) grown in Saurashtra region of Gujarat

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ABSTRACT : Four mango cultivars which are commonly found in Saurashtra region were selected for the study. To prepare mango pulp, the fruits were peeled and juice (must) was immediately after crushing and stored it up to 240 days. Under this investigation sensory evaluation was recorded. The cultivar *Kesar* has recorded for maximum taste and colour score, whereas the cultivar *Alphanso* was recorded for maximum flavour, texture and overall acceptance score.

KEY WORDS : Mango Pulp, Storage Temperature, Sensory characters

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Mango (*Mangifera indica* L.) belongs to family *Anacardiaceae* and is an important food and crop in India. The production of the crop varies from small scale farming to huge, highly organized orchard, where the best available technology is applied. Its cultivated in India has been estimated to be 2.297 million ha with an annual production of 15.188 million MT (Anonymous, 2011). As an export fruit crop, mango earns the country foreign income while at the same time acts as a source of household income for the resources- poor farmer. The mango fruit is highly perishable, it ripened fast during summer and becomes unconsumable very soon. However, despite the importance of mango in India, 40-50 per cent of the fruit are lost during postharvest handling. The production of mango is increasing steadily, creating glut in the market during on season, due to which farmers get very meager price for their produce.

Therefore, value addition in mango fruits becomes necessary in order to minimize the glut in the market during its peak season of production. Hence, there is an urgent need to develop some suitable technology for the preparation of mango pulp, which could be economical and made available to a large population. The most popular varieties for processing are *Alphanso* and *Kesar*. About 6 lakh tonnes of mango is processed for pulp production. Fruit pulp has an important place, as they are rich in essential minerals,

vitamins and other nutritive constituents. Looking to the demand of mango pulp, there is a great scope for the preparation of fruit pulp and other fruit based product.

RESEARCH METHODS

Four mango varieties (*Alphanso*, *Dasheri*, *Kesar* and *Desi*) were used in this study for preparation of mango pulp. Fully mature and uniform size mango were purchased from the Junagadh local market and immediately brought to the laboratory. The fruit were sorted based on the assessment of colour, ripeness, shapes, size or microbial damage. The fruit were peeled using stainless steel knives. Peeled fruit was cut into small pieces and pulp was made by using an electric blender. After extraction, the pulp was adjusted at 200Brix by adding sugar. Potassium metabisulphite preservative (800-1000 ppm) was added to the pulp 5 minute before the end of pasteurization time. The juice was then packed in washed cleaned sterilized glass bottle and sealed.

Treatments:

The details of various treatments are presented below:

- Kesar = V₁
- Alphanso = V₂
- Dasheri = V₃
- Desi = V₄

Analysis of quality parameters:

The quality or sensorial evaluation of various mango varieties was evaluated by using 9 point hedonic scale as described by Larmond (1977). Four panelists were selected on the basis of their ability to discriminate and scale a broad range of different attributes. The judge randomly tested the colour, taste, flavour, appearance and overall acceptability from each variety.

Statistical analysis:

The recorded data was conducted in Completely Randomized design. The data collected on physiochemical parameter of fresh processed mango pulp on 0, 30th, 60th, 90th, 120th, 150th, 180th, 210th and 240th day were statistically analyzed with CRD (Panse and Sukhtame, 1985).

RESEARCH FINDINGS AND DISCUSSION

The results obtained from the present investigation are summarized below :

Sensory evaluation of mango pulp:

Colour:

Visual examination by the consumers is of significant

importance that it attracts the eyes of consumer so the product colour is one of the important quality parameter. Panelists rated mango pulp during storage revealed that it significantly decreased with the advancement of storage. Among the all four varieties, *Kesar* variety to be the significantly maximum colour score. Relatively lower scores were assigned to variety *Desi* (Table 1). The colour of the pulp may be due to carotenoid content and decreased due to its disappearance in slow rate; hence it declined. The similar results were also obtained by Durrani *et al.* (2011) in mango pulp, Kotecha and Kadam (2003) in tamarind pulp and Barmanray (1998) in mango RTS beverage blended in cold extracted pear juice/pulp.

Flavour:

Flavour is the sensory impression of a food or other substance and is mainly determined by the chemical sense of taste and smell. Mango variety *Alphanso* seemed to be highly acceptable for flavour as compare to rest of the three varieties. Also it is evident from the result obtained in present investigation that flavour of mango pulp is deteriorated with the advancement of storage period (Table 2). The reduction in flavour value is due to oxidation process the flavouring

Treatments	Treatments details	Storage period (days)								
		0	30	60	90	120	150	180	210	240
V ₁	Kesar	8.97	8.68	8.25	7.52	7.37	6.58	6.51	6.12	5.79
V ₂	Alphanso	8.72	8.54	8.10	7.08	6.82	6.50	6.42	5.90	5.50
V ₃	Dasheri	8.72	8.60	8.13	7.29	7.06	6.35	6.40	5.88	5.49
V ₄	Desi	8.32	8.31	8.02	6.98	6.83	6.04	5.97	5.52	5.13
S.E.,±		0.06	0.07	0.04	0.08	0.09	0.07	0.08	0.08	0.06
C.D. (P=0.05)		0.18	0.19	0.10	0.23	0.25	0.19	0.22	0.22	0.17

Treatments	Treatments details	Storage period (days)								
		0	30	60	90	120	150	180	210	240
V ₁	Kesar	9.06	8.23	7.56	7.42	7.38	7.19	5.83	5.58	5.46
V ₂	Alphanso	9.13	8.27	7.90	7.71	7.69	7.46	5.75	5.63	5.58
V ₃	Dasheri	8.96	8.00	7.17	7.13	6.92	6.77	5.29	5.15	5.10
V ₄	Desi	8.88	7.94	7.27	7.31	6.69	6.46	5.02	4.88	4.90
S.E.,±		0.04	0.06	0.05	0.06	0.07	0.07	0.06	0.08	0.06
C.D. (P=0.05)		0.13	0.18	0.15	0.16	0.21	0.19	0.18	0.22	0.17

Treatments	Treatments details	Storage period (days)								
		0	30	60	90	120	150	180	210	240
V ₁	Kesar	9.19	8.13	7.81	7.60	7.17	6.94	6.33	5.83	5.29
V ₂	Alphanso	8.77	8.08	7.60	7.40	7.02	6.79	6.40	5.90	5.25
V ₃	Dasheri	8.83	7.98	7.50	7.31	7.06	6.83	6.13	5.63	4.38
V ₄	Desi	8.27	7.81	7.44	7.25	6.85	6.42	5.94	5.44	4.52
S.E.,±		0.08	0.08	0.06	0.04	0.06	0.06	0.07	0.07	0.08
C.D. (P=0.05)		0.22	0.23	0.16	0.11	0.17	0.17	0.20	0.20	0.23

Table 4 : Effect of different varieties on texture of mango pulp during storage

Treatments	Treatments details	Storage period (days)								
		0	30	60	90	120	150	180	210	240
V ₁	Kesar	9.02	8.44	8.04	7.52	7.15	6.79	6.38	5.38	5.10
V ₂	Alphanso	9.08	8.50	8.19	7.65	7.31	6.94	6.69	5.67	5.63
V ₃	Dasheri	8.98	8.10	7.96	7.31	7.00	6.73	6.06	5.21	4.67
V ₄	Desi	8.73	7.54	7.71	7.17	6.85	6.27	5.83	4.92	4.73
S.E.±		0.04	0.07	0.04	0.05	0.06	0.09	0.06	0.09	0.11
C.D. (P=0.05)		0.11	0.21	0.11	0.15	0.16	0.26	0.17	0.25	0.31

Table 5 : Effect of different varieties on overall acceptability of mango pulp during storage

Treatments	Treatment details	Storage period (days)								
		0	30	60	90	120	150	180	210	240
s	Kesar	36.2	33.4	31.6	30.0	29.0	27.5	24.6	23.3	21.6
V ₂	Alphanso	35.7	33.4	31.7	29.8	7.31	27.6	24.7	23.6	21.9
V ₃	Dasheri	35.4	32.6	30.7	29.0	7.00	26.6	23.3	22.3	19.6
V ₄	Desi	34.1	31.6	30.4	28.7	6.85	25.1	22.3	21.2	19.2
S.E.±		0.12	0.14	0.12	0.11	0.13	0.13	0.13	0.13	0.15
C.D. (P=0.05)		0.35	0.41	0.34	0.31	0.38	0.37	0.37	0.36	0.42

compounds viz., esters, aldehydes, acids, ketones, tannins and ethers got decreased and flavour value was also simultaneously decreased. Similar results were found by Ledekar (2008) in mango puree and sorbet, and Correa *et al.* (2010) in guava nectar.

Taste:

Organic acid and sugars ratio primarily creates a sense of taste which is perceived by specialized taste buds on the tongue. The results indicated that the taste value of mango pulp with the increase in storage period of 240 days. The score presented in Table 3 for taste of various mango variety pulps clearly indicated that the variety *Kesar* was perceived to be the best for taste among all the variety. Similar observations were noted by Deka *et al.* (2005) in mango-pineapple and Deka *et al.* (2004) in lime-aonla RTS beverages stored 6 months under 3 different storage environments.

Texture:

It is an important quality parameter to attract the consumers. In present study, it is clear from data that appearance of the mango pulp is decreased as the storage period increase. On 240th of storage, the maximum texture value was recorded in *Alphanso* as compared to *Kesar*, *Desi* and *Dasheri* (Table 4). Similar findings were observed by Deka *et al.* (2005) in mango-pineapple and Deka *et al.* (2004) in lime-aonla RTS beverages.

Overall acceptance:

The data on overall acceptance of mango pulp revealed that it was decreased as the storage period increased. In the present study, the minimum reduction in overall acceptance

was recorded in *Alphanso*. As discussed earlier that the maximum colour, taste, flavour and texture of the product during storage, which ultimately resulted in higher overall acceptance score up to 240 days of storage (Table 5). Similar results were found by Deka *et al.* (2005) in the mango-pineapple and Deka *et al.* (2004) in lime-aonla RTS beverages, Prasad and Mali (2000) in pomegranate squash, and Jain *et al.* (1996) in mango RTS beverages prepared from *Amrapali* and *Kesar*.

REFERENCES

Anonymous (2011). Indian horticulture database. National Horticulture Board, Department of Agriculture & Cooperation, India.

Barmanray, A. (1998). Studies on the processing technology of sand pear (*Pyrus serotina* Rehd. var. *Culta*) cv. *patharnakh*. M. Sc. (Ag.) Thesis, Chaudhary Charan Singh Haryana Agricultural University, Hisar, HARYANA (INDIA).

Correa, M.J.C., Chaves, J.B.P., Jham, G.N., Ramos, A.M., Minim, V.P.R. and Yokota, R.C. (2010). Changes in guava (*Psidium guajava* L. Var. *Paluma*) nectar volatile compounds concentration due to thermal processing and storage. *Sci. Fd. Technol.*, **30**(4): 1061-1068.

Deka, B.C., Sethi, V., Suneja, P. and Srivastava, V. K. (2004). Physico-chemical changes of lime-aonla spiced beverage. *J. Fd. Sci. Technol.*, **41**(3): 329-332.

Deka, B.C., Sethi, V. and Saikia, A. (2005). Changes in quality of mango-pineapple spiced beverage during storage. *Indian J. Hort.*, **62**(1): 71-75.

Durrani, Y., Zeb, A., Ayub, M., Ullah, W. and Muhammad, A. (2011). Sensory evaluation of mango (*Chausa*) pulp preserved with addition of selected chemical preservatives and antioxidant during storage. *Sarhad J. Agric.*, **27**(3): 471-475.

Jain, V., Tiwary, B.L., Sharma, M.G. and Saxena, R.R. (1996). Evaluation of late maturing mango varieties for the preparation of beverages as nectar and RTS. *Indian Fd. Packer*, **50**(3): 9-14.

Kotecha, P.K. and Kadam, S.S. (2003). Studies on browning in tamarind pulp during storage. *J. Fd. Sci. Technol.*, **40**(4): 398-399.

Larmond, E. (1977). Laboratory Method for Sensory Evaluation of Food, Canada Deptt Agri. Pub. Pp: 1637.

Ledekar, C.N. (2008). Differences in sensory characteristics among

various mango cultivars in the form of fresh sliced mango, mango purée and mango sorbet. M.Sc. (Human Nutrition) Thesis, Kansas State University, Manhattan.

Panse, V.G. and Sukhatme, P.V. (1985). *Statistical methods for agricultural workers*, I. C. A. R., New Delhi. pp. 361.

Prasad, R.N. and Mali, P.C. (2000). Changes in physico-chemical characteristics of pomegranate squash during storage. *Indian J. Hort.*, **57**(1): 18-20.

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