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# Sensory evaluation of blended nectar of guava-papaya

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SUMMARY :

The experiment was carried out to evaluate effect of different blending proportions of the pulp of guava with papaya pulp. For this experiment, Completely Randomized Design (C.R.D.) was used. During the course of investigation, sensory qualities of blended nectar were analyzed of an interval of 60 days. All the treatments under study showed a remarkable variation with respect to sensory qualities of blended guava – papaya nectar during ambient storage condition. The blended nectar of commercial both the varieties could be stored with optimum sensory qualities by blending in different ratios. Blending the pulp of guava with the pulp of papaya, improve the overall acceptability of blended nectar. Treatment $T_2$ (75:25) found most suitable for blending of guava and papaya nectar.

**KEY WORDS** : Blending, Design, Sensory, Storage, Overall acceptability

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Guava (*Psidium guajava* L.) is tropical fruit rich in high profile nutrients with unique flavour, taste and health promoting qualities, the fruit easily fits into the category of new functional foods often labeled as "Super fruits". It is an evergreen, tropical shrub or low growing small tree probably obtained in the Central America.

The fruit is soft when ripe with sweet musky aroma and creamy texture flesh. Internally, its flesh varies in colour depending upon the cultivar and it may be white, pink, yellow or red. Ripe fruits have rich flavour with sweet tart taste. Each fruit contains numerous tiny, semi-hard edible seeds, concentrated especially as its center.

Guava is considered as one of the exquisite, nutritionally valuable and remunerative crop. The fruit is an excellent source of ascorbic acid (260 mg/100 g), pectin (1.15 %), minerals like phosphorus (23-27 mg/100 g), calcium (14-30 mg/100 g), etc. as well as vitamins like vitamin A, thiamin, riboflavin, pantothenic acid and niacin etc. (Bose *et al.*, 1999).

Papaya is large pear shaped fruit with golden yellow skin. It can be 75 to 500 mm in length. The pulp of papaya is also golden – yellow and it's fleshy, juicy and smooth. It has a sweet tart flavour. It has a large central cavity which is filled with shiny, gray seeds.

Fruits are excellent source of vitamin A (2020 IU/ 100 g) next to mango (2500 IU/100 g) and also a rich source of other vitamins like thiamin, riboflavin, nicotinic acid and ascorbic acid (Wall, 2006). Unfortunately papaya fruit has not caught the fancy of the consumers as much

as it deserves, mainly because of its odour, which is not high appealing and thus, limits its commercial exploitation at processing levels, whereas guava emits a sweet aroma which is pleasant, refreshing and acidic in flavour. Therefore, blending the juice of these two fruits product could be an economic preposition to utilize them profitably. There is good possibility of enhancing the flavour and acceptability of papaya product by diversification *i.e*. by blending technology.

## EXPERIMENTAL METHODS

The fully mature fruits of guava (cv. ALLHABAD SAFEDA) and papaya (cv. TAIWAN) were selected for this research. Both the fruits were collected from Regional Fruit Research Station, Vengurle, Dist. Sindhudurg (Maharashtra) during the year 2014-15. The equally ripe fruits were selected and washed under tap water. For extracting of pulp, peel the fruits with stainless steel knife and then cut into pieces. Seeds were discarded manually and crushed in mixer. The pulp of guava mixed with the pulp of papaya in the ratio of 75:25, 50:50 and 25:75 apart from checks. Boil the pulp for 20 min with continues starring. The nectar of 20 per cent pulp, 20 $^0$Brix TSS and 0.3 per cent acidity with addition of KMS (Potassium metabi-sulphite) at the rate of 140 mg/lit was prepared. The nectar bottled in pre sterilized glass bottles. Label it and kept for storage at ambient storage condition upto 120 days. The sensory evaluation of the beverages was done by 5 semi skilled judges of an interval of 60 days by adopting nine point hedonic scale (Amerine *et al.*, 1965). The data was analyzed through CR Design method.

## EXPERIMENTAL FINDINGS AND ANALYSIS

The blended nectar of guava and papaya was examined for its sensory qualities with the recipe as 20 per cent pulp, 20 $^0$Brix TSS and 0.3 per cent acidity. Data regarding sensory rating are presented as below.

**Sensory quality of blended nectar :**

It could be seen from the data on the sensory evaluation of blended guava and papaya nectar during storage presented in Table 1, 2 and 3 that the different blending ratios exhibited significant influence on the sensory score throughout the storage period of 120 days.

The treatment $T_5$ (00:100) recorded significantly highest 8.2, 7.2 and 7.0 sensory score for colour after 0, 60 and 120 days of storage period among the rest of the

**Table 1 : Sensory evaluation of blended nectar at initial days of storage**

| Treatments | Colour | Flavour | Taste | Texture | Overall acceptability |
|---|---|---|---|---|---|
| $T_1$ (100:00) | 5.0 | 8.4 | 7.0 | 8.6 | 7.25 |
| $T_2$ (75:25) | 5.8 | 7.8 | 8.0 | 8.4 | 7.50 |
| $T_3$ (50:50) | 6.4 | 7.4 | 7.2 | 7.6 | 7.15 |
| $T_4$ (25:75) | 7.2 | 6.6 | 6.6 | 7.4 | 6.95 |
| $T_5$ (00:100) | 8.2 | 6.2 | 6.2 | 7.2 | 6.95 |
| S.E.± | 0.15 | 0.18 | 0.16 | 0.15 | 0.08 |
| C.D. (P=0.05) | 0.44 | 0.54 | 0.47 | 0.45 | 0.25 |

**Table 2: Sensory evaluation of blended nectar at 60 days of storage**

| Treatments | Colour | Flavour | Taste | Texture | Overall acceptability |
|---|---|---|---|---|---|
| $T_1$ (100:00) | 4.8 | 7.6 | 6.6 | 8.2 | 6.80 |
| $T_2$ (75:25) | 5.6 | 7.4 | 7.4 | 7.8 | 7.05 |
| $T_3$ (50:50) | 6.2 | 6.8 | 6.6 | 7.2 | 6.70 |
| $T_4$ (25:75) | 6.4 | 6.4 | 6.2 | 6.6 | 6.40 |
| $T_5$ (00:100) | 7.2 | 6.2 | 6.0 | 6.2 | 6.40 |
| S.E.± | 0.20 | 0.15 | 0.17 | 0.14 | 0.12 |
| C.D.(P=0.05) | 0.58 | 0.44 | 0.50 | 0.42 | 0.35 |

treatments, respectively. While, significantly lowest sensory score 5.0, 4.8 and 4.4 for colour recorded in treatment $T_1$ (100:00) during same investigation period. It is clear from the data that, the blending of pulp of guava with papaya influences the sensory score for colour of blended nectar irrespective of the blending proportions. The colour of blended nectar slightly changed from its original bright whitish yellow colour to golden yellow. There was no apparent browning or significant loss of colour. Thus, the organoleptic score for colour of nectar decreased slightly during storage period. Similar result was obtained by Gowda *et al.* (2004).

Similarly, the treatment $T_1$ (100:00) recorded significantly maximum (8.4, 7.6 and 7.2) whereas, the treatment $T_5$ (00:100) recorded significantly minimum (6.2. 6.2 and 5.2) sensory score for flavour during 0, 60 and 120 days of storage period, respectively. Blending the pulp of guava with the pulp of papaya, increases the sensory score for flavour of the nectar during storage. Reduction in mean flavour score of the nectar during storage, irrespective of treatments are attributed to the loss of flavour compounds during storage since they are highly volatile. The observation in accordance with this finding was also reported by Gowda *et al.* (2004).

The sensory score for taste varied significantly due to different blending ratios during storage. The treatment $T_2$ (75:25) recorded significantly highest 8.0, 7.4 and 7.2 score during 60 days interval upto 120 days of ambient storage period, respectively. However, the treatment $T_5$ (00:100) recorded significantly lowest 6.2, 6.0 and 5.4 score during similar reporting period. The present results are in the line with findings reported Gowda *et al.* (2004).

The significantly maximum sensory score for texture was reported in the treatment $T_1$ (100:00) with 8.6, 8.2 and 7.8 while, significantly minimum score was reported in the treatment $T_5$ (00:100) with 7.2, 6.2 and 5.6 during 0, 60 and 120 days of storage period, respectively. Blending the pulp of guava with the pulp of papaya, increases the sensory score for texture of the nectar during storage. Research conducted by Gowda *et al.* (2004) also proved the above hypothesis.

However, the sensory score for overall acceptability of blended guava – papaya nectar varied significantly due to the different blending ratios. The treatment $T_2$ (75:25) recorded significantly maximum (7.50, 7.05 and 6.55) sensory score at 0, 60 and 120 days of storage period, respectively. Whereas, treatments $T_4$ (25:75) and $T_5$ (00:100) recorded significantly lowest 6.95 and 6.40 score by each during initial and 60 days of storage periods, respectively. While, the treatment $T_4$ (25:75) recorded significantly lowest score (5.70) for an overall acceptability of blended product at the end of 120 days of storage. It was observed that with the increase in storage period there was decrease in the rating of all organoleptic quality characters in both the fruit pulp. Jain and Asati (2004) have also reported decrease in overall acceptability of guava with storage period. Similar results were obtained by Harnanan *et al.* (1980) and Baramanray *et al.* (1995). The decrease in overall acceptability rating during storage is due to decrease in rating of colour, flavour, taste and texture of the fruit pulp. Similarly, Chan and Cavaletto (1982) have reported change in sensory quality of aseptically processed guava and papaya puree during storage. Similar work related to the present investigation was also carried out by Revathi and Singh (2012); Shelke *et al.* (2014); Smitha *et al.* (2012); Reddy and Chikkasubganna (2009); Rajendra *et al.* (2013) and Patil *et al.* (2014).

**Table 3: Sensory evaluation of blended nectar at 120 days of storage**

| Treatments | Colour | Flavour | Taste | Texture | Overall acceptability |
|---|---|---|---|---|---|
| $T_1$ (100:00) | 4.4 | 7.2 | 6.2 | 7.8 | 6.40 |
| $T_2$ (75:25) | 5.2 | 6.6 | 7.2 | 7.2 | 6.55 |
| $T_3$ (50:50) | 5.6 | 5.8 | 6.4 | 6.6 | 6.10 |
| $T_4$ (25:75) | 6.0 | 5.4 | 5.8 | 5.6 | 5.70 |
| $T_5$ (00:100) | 7.0 | 5.2 | 5.4 | 5.6 | 5.80 |
| S.E.± | 0.23 | 0.20 | 0.22 | 0.13 | 0.10 |
| C.D. (P=0.05) | 0.69 | 0.58 | 0.67 | 0.40 | 0.29 |

**Conclusion :**

All the treatments under study showed a remarkable variation with respect to sensory qualities of blended guava – papaya nectar during ambient storage condition. The blended nectar of commercial both the varieties could be stored with optimum sensory qualities by blending in different ratios. Blending the pulp of guava with the pulp of papaya, improve the overall acceptability of blended nectar. Treatment $T_2$ was (75:25) found most suitable for blending of guava and papaya nectar among rest of the treatments under investigation.

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