DEVELOPMENT AND EVALUATION OF VALUE ADDED GUAVA (PSIDIUM GUAJAVA L.) NECTAR AND ITS NUTRITIONAL QUALITY

Maya*, Dubey Ritu P* and Prasad RanuD

ABSTRACT

Guava (Psidium guajava L.), the apple of the subtropics, is one of the most common fruit in India. The taste of guava is often described as a combination of pear and strawberries. Guavas are a good source of several vitamins and minerals including vitamin-C, Calcium, Potassium, Iron, Carotene and foliate. It is also a good source of fiber, which is known to help prevent gastrointestinal cancers as well lowering cholesterol level. Development and evaluation of value added Guava nectar is a RTS beverages made from the guava fruit and mixture of mint and ginger extract. It is typically made by fresh guava fruit (Allahabad safeda). The value added guava nectar usually used to refer to the sweet liquid found in some flavour, it can also be used in the context of a sweet and cooling refreshing drink. It is pasteurized drink so it will last longer; although once the package has been opened it should be kept refrigerated and used within two month. It is riches source of ascorbic acid and minerals. It can be used medicinally as an astringent and scurvy disease. The experiment work of value added guava nectar was conducted in the laboratory of home science foods and nutrition lab. Dept. of Foods & Nutrition Ethelind School of Home Science Sam Higginbottom University of Agriculture, Technology And Sciences, Allahabad - 211007 (U.P.). The present studies was undertaken with the objective to determine-

- To standardize a suitable concentration of herbal extract for guava nectar.
- To assess the organoleptic quality of guava nectar.
- To analyze the chemical properties of prepared nectar.
- To assess the changes in the prepared nectar during the storage period.

The replication three times for all treatments and data obtained from investigation was statically analyzed by using analysis of variance (ANOVA) and critical difference (CD) techniques. Sensory evaluation was carried out by using nine point hedonic scale.

Keywords : Nutritional quality of value added guava factor

INTRODUCTION

Guava (Psidium guajava L.), the apple of the subtropics, is one of the most common fruit in India. Guava belongs to the family myrtaceae Bose and Mitra (1990). Guava trees or shrubs are small only reaching 33 ft however many trees in california rarely reach over 10 to 12 ft. The flowers develop into its popular fruit. The fruit can be 2 to 4 inches long and are either pear shaped or round, with varying quantities of edible seeds. Its flesh colour varies from white, pink, yellow, or red, and its odors is musky and pungent.

Many number of varieties and types of guava are found to be growing, like Lucknow-49, Banaras, harijha, Apple colour, Bharuipur, Behat coconuts, Pear-shaped, Red fleshed, seedless and Allahabad Safeda. Bose and Mitra (1990).

Allahabad safeda, which is the most suitable cultivar of Uttar Pradesh. Tree is vigorous, medium tall 5.8 to 6.2 m, branching heavy with dense foliage tendency to produce long shoots. Crown boad and compact. Leaves 9.5 to 9.8 cm long and 4.8 cm wide, elliptical to oblong in shape fruite medium, average weight 180gm roundish in shape, skin colour, yellowish with, good keeping quality. Chundawat (1976) reported that all the cultivars except Allahabad safeda could be stored for 2 days at room temperature. Singh and Mathur, (1954) reported, the Allahabad safeda can be stored for four weeks at 47- 57°F(8.5 - 14°C).

The Guava is a good source of several vitamin and minerals including vitamin-C, Calcium, Potassium, Iron, Carotene (vitamin A) and folate. It is also a good source of fiber, which is known to help prevent gastrointestinal cancer as well as lowering cholesterol level. In addition, the level of vitamin-C in the edible rind of guava is five times higher than that of orange. Nutritive value of 100 gm edible pulp Calories : 92 kcal, Dietary fiber : 9.7, Protein: 2g, Fat : 1.1g, Saturated fat: 0.3g, Mono unsaturated fat: 0.1g, Poly unsaturated fat: 0.5g, Cholesterol: 0 mg, Carbohydrates: 21 gm, Calcium: 18 mg, Carotene (Vit. A): 713 IU, Vitamin C: 165 mg, Sodium: 5mg

Guava ripens at room temperature until they give to gentle pressure refrigerate ripe guavas within 2 days. Guavas can be eaten as fresh when ripened, prepared as a sauce or chutney, or cooked as a vegetable when green.

It can be processed for jam, jelly, nectar, and fruit juices as well as used for flavoring other foods. Guavas fruit are eaten, but are also delicious seeded and served sliced as dessert or salads. Guava jelly is lovely on toast.

Guava nectar is a (RTS) beverages made from the guava fruit. It is typically made by crushing fresh guava fruits and using the resulting guava pulp to create a rich, sweet juice which has a great deal of flavour. Although nectar is usually used to refer to the sweet liquid found in some flavours, it can also be used in the context of a sweet and refreshing drink. Plain guava nectar tends to be very thick, since it is made from a pulp concentrate, and it has all of the sweetness and tang of fresh fruit. (Smith, 2008)
When blended with other fruit juices guava nectar can act as a sweetener, it can be used in the production or sorbet and ice cream as well. Like many juices, guava nectar can be pasteurized so that it will last longer, although once the package has been opened it should be kept under refrigeration contain and used within a week. (Smith, 2008). This tasty and exquisite nectar is rich in vitamin A and C, Calcium and other minerals. This refreshing cool appetizer is simply great.

Nutritional facts per 100ml guava nectar -Energy- 60kcal, Protein -1g, Fat -Negligible, Carbohydrates - 15gm, Sodium - 20mg, Potassium - 30mg, Vitamin C - 250mg, Beta-carotene - 110 mg, Calcium - 7.5 mg, Iron - 1.5 mg.

MATERIALS AND METHODS

The Study entitled "Development and evaluation of value added Guava (psidium guajava L.), nectar and its nutritional quality" was carried out in Nutritional Research Laboratory Department of Home Science, Allahabad Agricultural Institute - Deemed University Allahabad U.P.

Sensory Evaluation- Sensory evaluation of the prepared products for their acceptability was done by a panel of judges. The score card based on the 9 point Hedonic Scale was used for analysis of sensory attributes like colour and appearance, consistency, taste and flavour and overall acceptability (Srilakshmi, 2007).

Nutritional Composition of the antioxidant rich herbal flavored value added grapefruit beverages.

- Determination of total soluble solid (TSS) by AOAC method (2005).
- Determination of acidity titration method by AOAC method (2005).
- Determination of Total sugar by AOAC method (2005).
- Determination of reducing sugar by AOAC method (2005).
- Determination of Non- reducing sugar by AOAC method (2005).
- Determination of ascorbic acid (vitamin- c) by 2-6, dicrolo indophenols.

Table 1: Details of treatment and control

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Product and product amount</th>
<th>Extract and Extract amount</th>
<th>Citric acid Benzoate</th>
<th>Sugar</th>
<th>Sodium</th>
<th>Replication</th>
</tr>
</thead>
<tbody>
<tr>
<td>T₀</td>
<td>Guava nectar 100ml</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>T₁</td>
<td>Guava-nectar 100ml</td>
<td>Mint-1ml</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>T₂</td>
<td>Guava-nectar 100ml</td>
<td>Mint-2ml</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>T₃</td>
<td>Guava-nectar 100ml</td>
<td>Mint-3ml</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

- T₀ is the control, T₁, T₂, T₃, is the treatment of guava nectar and value addition with mint and Ginger extract.
- There were 3 replications for each treatment.

Preparation of Guava Nectar:

Preparation of guava pulp

Guava pulp prepared by the guava fruit. Took a fixed amount of guava (1kg) in a tray and washes them. Then took a knife and cut off guava fruits in small pieces. After that took a pressure cooker and added water and guava fruits pieces in 1:1 ratio and cooked for 10-15 minutes at 100°C to get the guava pulp, which was finally refined by passing it through the muslin cloth and collected the pure guava pulp.

Preparation of Mint/Ginger extract

took some mint leaf/ Ginger in a tray and wash it. Then weighing 100gm mint leaf/ Ginger and grained it, which refined by passing through the muslin cloth and got the mint and ginger extract.

Preparation of standard or mint/ginger guava nectar

Ingredient | amount |
---|------|
Guava | 1kg |
Sugar | 300gm |
Citric acid | 5gm |
Sodium benzoate | 1gmm |
Mint/ Ginger | 100gm |

METHOD

First prepared guava pulp 1kg. Then transfer guava pulp in a medium size pan. After adding guava pulp, weighted the ingredients-300g sugar, 5g citric acid and 1gm sodium benzoate and cooked it for 45-50 minutes at 100°C with a wooden spoon to mix thoroughly. After cooking looked for the end point of cooked guava nectar. Took a bowl and added 100ml water and took tea spoon and add one drop guava nectar in the bowl. When cooked material is not mixed in in water highly, this is the end point of cooked guava nectar. Pasteurized it at 90°C for 20 minutes and got red wine colour guava nectar. Cooled and collected in a small bottle and added mint or ginger extract in amount of 1%, 2%, in amount of 1%, 2% and 3%.

Mint and ginger extract added guava nectar showed significantly increased pH. pH treatment T₂ (5.4) ginger extract added guava nectar give higher pH followed by T₁ (5.2) mint added guava nectar and minimum pH was seen in T₀, T₁, T₂ mint and ginger extract added guava nectar. Higher TSS is in the ginger extract added guava nectar T₂ (50.8) followed by mint extract added guava nectar T₂ (46.1) and minimum was found in T₀ in acidity significantly increase in treatment T₂ (0.46) in mint extract added guava nectar treatment T₂ (0.45) and minimum acidity is in the T₀ and treatment T₁ and T₂.
The organoleptic quality, which include color, consistency, flavor, taste and overall acceptability showed significant increase. Table 4.2 shows the attractive color of treatment T₂ (8.0, 7.5, 8.2, 8.2) with mint extract T₂ (8.0, 8.4, 8.3, 8.6) ginger extract added guava nectar was consider to be the best by a panel of 5 judges in terms of color, consistency, flavor, taste and overall acceptability.

**CONCLUSION**

guava nectar was prepared by 1%, 2%, 3% mint and ginger extract it is rich source of energy, minerals, ascorbic acid and other nutrients, the analyzed chemical property of prepared guava nectar there were significantly increase in content of TSS, Acidity, Total sugar and Reducing sugar and decrease in pH, Non reducing sugar an ascorbic acid. The organoleptic quality of mint and ginger extract added guava nectar like Color, Consistency, Flavor, Taste and Overall acceptability decrease.

**RECOMMENDATION**

It can be recommended for P.E.M., scurvy, heart and kidney disease value added nectar made out of guava (Allahabad safeda) variety is refreshing cooling drink and is improve an variety of beverages. Since, it is easy to prepare drink. It can be also kept up to two months and can be recommended for off season and where guava is not grown.

**Table 4.1 Effect of various levels of mint and ginger extract on the qualitative parameter in Guava nectar**

<table>
<thead>
<tr>
<th>Component</th>
<th>Mint extract added guava nectars Treatments</th>
<th>Ginger extract added guava nectars Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T₀ (100ml guava nectar)</td>
<td>T₁ (100ml guava nectar + 1% mint extract)</td>
</tr>
<tr>
<td></td>
<td>T₀ (100ml guava nectar)</td>
<td>T₁ (100ml guava nectar + 1% ginger extract)</td>
</tr>
<tr>
<td>pH</td>
<td>5.2 ± 0.004</td>
<td>5.2 ± 0.004</td>
</tr>
<tr>
<td>TSS</td>
<td>45.5 ± 0.098</td>
<td>45.5 ± 0.098</td>
</tr>
<tr>
<td>Acidity</td>
<td>0.3 ± 0.007</td>
<td>0.3 ± 0.007</td>
</tr>
<tr>
<td>Total sugar</td>
<td>12.01 ± 0.006</td>
<td>12.01 ± 0.006</td>
</tr>
<tr>
<td>Reducing sugar</td>
<td>7.3 ± 0.070</td>
<td>7.3 ± 0.070</td>
</tr>
<tr>
<td>Non reducing</td>
<td>4.6 ± 0.066</td>
<td>4.6 ± 0.066</td>
</tr>
<tr>
<td>Ascorbic acid</td>
<td>250.9 ± 0.281</td>
<td>252.3 ± 0.281</td>
</tr>
</tbody>
</table>

**Table 4.2 Effect of various levels of mint and ginger extract on the organoleptic characteristics of guava nectar**

<table>
<thead>
<tr>
<th>Organoleptic quality</th>
<th>Mint extract added guava nectars Treatments</th>
<th>Ginger extract added guava nectars Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T₀ (100ml guava nectar)</td>
<td>T₁ (100ml guava nectar + 1% mint extract)</td>
</tr>
<tr>
<td></td>
<td>T₀ (100ml guava nectar)</td>
<td>T₁ (100ml guava nectar + 1% ginger extract)</td>
</tr>
<tr>
<td>Color</td>
<td>7.7 ± 0.161</td>
<td>7.7 ± 0.161</td>
</tr>
<tr>
<td>Consistency</td>
<td>7.5 ± 0.130</td>
<td>7.5 ± 0.130</td>
</tr>
<tr>
<td>Flavor</td>
<td>7.9 ± 0.209</td>
<td>7.9 ± 0.209</td>
</tr>
<tr>
<td>Taste</td>
<td>7.7 ± 0.259</td>
<td>7.7 ± 0.259</td>
</tr>
<tr>
<td>Overall acceptability</td>
<td>7.7 ± 0.178</td>
<td>7.7 ± 0.178</td>
</tr>
</tbody>
</table>
REFERENCES


Smith, S.F., (2008), what is guava nectar www. Yahoo.com