PREPARATION OF VALUE ADDED MIXED GUAVA AND PINEAPPLE CHEESE

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ABSTRACT

The present investigation was conducted during 2015-2016 in Processing Lab, Department of Horticulture, SHUATS, Allahabad. The experiment was conducted in Completely Randomised Design (CRD) with seven treatments, replicated thrice. The value added product was evaluated for its physico-chemical properties during storage. Seven treatments were included in the trial viz; T1 Guava pulp (100% guava), T2 Pineapple (5%), T3 Pineapple (10%), T4 Pineapple (15%), T5 Pineapple (20%), T6 Pineapple (25%), T7 Pineapple (30%) were tested in three replication. On the basis of evaluation of Guava cheese the T3 - Guava cheese + Pineapple (10%) was found superior in respect of all the parameters T.S.S (10.44 °Brix), pH (4.33) and overall acceptability score (7.34) after 90 days storage. The highest net returns (Rs. 139.37/Kg) and higher benefit cost ratio (1.80:1) was also found superior in T3 - Guava pulp (90%) + Pineapple (10%).

Key words: Guava (Psidium guajava L.), Pineapple (Ananas comosus L.), Mixed guava & pineapple cheese, Value Addition and overall acceptability.

INTRODUCTION

Guava (Psidium guajava) also called "Apple of Tropics", originated in tropical America perhaps from Mexico to Peru belongs to family Myrtaceae, Guava claims fourth most important fruit after mango, banana and citrus and has a high nutritive value that is why it is considered to be the poor man's apple.

Uttar Pradesh is the largest producer of guava, followed by Maharashtra, Madhya Pradesh, Bihar and West Bengal. Uttar Pradesh ranks first both in area under cultivation (39890 hectare) and production (486720MT) (NHB Data base 2010-2011). The major guava producing areas in Uttar Pradesh are Allahabad, Varanasi, Lucknow, Kanpur, Aligarh and Agra. Cultivation of Guava is so naturalized in Uttar Pradesh that it is hard to believe it is not native to India.

Guava is a chief and rich source of vitamin "C" (300mg/100g pulp) and Pectin (2.33%). It is also contains fair amount of calcium, phosphorus and vitamin A (Phandnis, 1970; Rathore, 1976).

Guava is only a delicious and nutritious table fruit but may also be utilized to make products like jam, jelly, cheese, juice, ice cream, canned segments, nectar, RTS beverage dehydrated slice, flakes, toffee, sauce guava lather, baby food puree, etc. However, the most commercially use of guava is for jelly preparation. Guava leaves are also used for curing Diarrhea and for Dying & Tanning.

Fruit cheese has recently become very popular. It is a confection of the type of Karachi Halwa and is prepared from fruit like guava, apple, pear and plum Fruit Cheese has a longer shelf life. Fruit cheese contains a minimum (9.43%) TSS and maximum (12.37) TSS prepared fruits.

MATERIALS AND METHODS:

The present investigation was conducted in Completely Randomised Design (CRD) with 7 treatments and 3 replications in the Processing Lab; Department of Horticulture, Sam Higginbottom University of Agriculture, Technology and Sciences, Allahabad during 2015-2016.

<table>
<thead>
<tr>
<th>Treatments</th>
<th>Treatment Combination</th>
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<tbody>
<tr>
<td>T1</td>
<td>Guava pulp (100% guava)</td>
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<tr>
<td>T2</td>
<td>Guava pulp (95%) + Pineapple (5%)</td>
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<tr>
<td>T3</td>
<td>Guava pulp (90%) + Pineapple (10%)</td>
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<tr>
<td>T4</td>
<td>Guava pulp (85%) + Pineapple (15%)</td>
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<tr>
<td>T5</td>
<td>Guava pulp (80%) + Pineapple (20%)</td>
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<tr>
<td>T6</td>
<td>Guava pulp (75%) + Pineapple (25%)</td>
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<tr>
<td>T7</td>
<td>Guava pulp (70%) + Pineapple (30%)</td>
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</tbody>
</table>

Total Seven treatments were included in the trial viz; T1 Guava pulp (100% Guava), T2 Pineapple (5%), T3 Pineapple (10%), T4 Pineapple (15%), T5 Pineapple (20%), T6 Pineapple (25%), T7 Pineapple (30%) were tested in three replication.

Flow chart of Guava cheese preparation:

- Fresh washed guava fruits
- Cutting into pieces and boil with equal quantity of water
- Meshing and removing pomace by sieving
- Adding sugar, butter and citric acid, value additive
- Cooking till, mixture become sufficiently thick, adding salt
- Removing from fire when mixture starts leaving side of pan
- Evenly distributing over butter coated tray and left for 3 hours to set
- Cutting into pieces with a sharp knife
- Pre-packing with butter paper and then packing in polythene
- Stored at ambient temperature
Sorting of fruits:
The fruits taken out of boxes were examined for rotting. Completely rotten fruits were discarded and rotten part of other fruits was removed. The fruits with pest infestation, injury or other defects were retained for processing.

Washing of fruits:
The fruits to be processed were washed thoroughly under tap water to remove dust, dirt and other undesired materials adhering to the fruits.

Cutting of fruit:
All the selected fruits were cut into thin slices of about 1 cm thickness. A stainless steel knife was used for the same.

Boiling of fruits slices:
The fruits slices were boiled with an equal quantity of water. This process was continued until the slice of fruits became sufficiently soft. The mixture was left for some time to cool.

Meshing and sieving:
The soft fruit slices were sufficiently meshed by hand to make easy the process of sieving. After meshing well, the sieving was started where all the pomace was removed. The pulp was collected in non-sticky, stainless steel fry pan.

Addition of sugar, butter and citric acid and value additives:
The most important task in preparation of Guava cheese in calculating the amount of sugar, butter and citric acid needed to be added to the fruit pulp after sieving.

- Weight of pulp = total weight of fruit- pomace
- After calculating the amount of fruit pulp, sugar, butter and citric acid was added on the following rates:
  - Sugar : 400 g/kg of pulp
  - Butter : 90 g/kg of pulp
  - Citric acid : 2g/kg of pulp
- Value addition : 50g, 100g, 150g, 200g, 250g and 300g (Pineapple) per treatments guava pulp

Common Salt : 2g/kg of pulp
Best quality of sugar was used and the percentage of sugar was kept same for all varieties besides their difference in inherent sugar concentration, 2.5g of common salt per kilogram of pulp were also added just before the end point.

Determination of end point: After the addition of sugar, butter, citric acid and value additive the mixture was cooked and stirring was continued until the time when mixture becomes sufficient thick and starts leaving the sides of pan. This is the end point of guava cheese preparation. The pan is removed from the fire.

Setting of guava cheese: When the mixture is removed from the fire it is spread over the butter coated tray and evenly distributed. The thickness of guava cheese layer should be kept around 1 cm. The trays are then left for 3 hours to set.

Cutting and packing: After setting of guava cheese the desirable cubes are made by a stainless steel knife, the cubes are packed in the best quality butter paper and again packed in a package of dense polythene of capacity of carrying different weight of guava cheese.

Storage: Guava cheese packs can be easily stored for more than six months at temperature between 10°C to 25°C but packs should be air tight to stop the effect of humidity. These packs can be kept at any dry places away from rodents.

RESULTS AND DISCUSSION
In order to have comparative study of different treatment combinations of value added Guava cheese, the research work was conducted in Processing lab of Department of Horticulture, Sam Higginbottom University of Agriculture, Technology and Sciences, Allahabad.

There were seven treatments under observation they are Guava cheese The experiment entitled "Preparation of Value Added Mixed Guava & Pineapple Cheese" was carried out in seven treatments were included in the trial viz; T<sub>1</sub>, Guava pulp (100%), T<sub>2</sub>, Pineapple (5%), T<sub>3</sub>, Pineapple (10%), T<sub>4</sub>, Pineapple (15%), T<sub>5</sub>, Pineapple (20%), T<sub>6</sub>, Pineapple (25%), T<sub>7</sub>, Pineapple (30%) were tested in three replication.

The experiment was laid out in Completely Randomised Design (CRD) with 7 treatments replicated thrice.

The main findings of the experiment are being summarize and conclusion drawn as follows:
1. TSS has been found highest in fresh and 30, 60 and 90 days storage period treatment with T<sub>1</sub>, Guava pulp (90%) + Pineapple (10%) and minimum was found in treatment T<sub>7</sub>, Guava pulp (100% guava).
2. Ascorbic acid was found highest in treatment with T<sub>3</sub>, Guava pulp (90%) + Pineapple (10%) and lowest was found in treatment with T<sub>1</sub>, Guava pulp (100% guava).
3. Acidity was found maximum in treatment with T<sub>3</sub>, Guava pulp (100% guava) and minimum was found in treatment with T<sub>1</sub>, Guava pulp (85%) + Pineapple (15%).
4. pH of guava cheese was found highest in treatment with T<sub>1</sub>, Guava pulp (100% guava) and lowest was found in treatment with T<sub>7</sub>, Guava pulp (85%) + Pineapple (15%).
5. The colour of guava cheese was found highest in treatment with T<sub>1</sub>, Guava pulp (90%) + Pineapple (10%) and lowest was found in treatment with T<sub>1</sub>, Guava pulp (100% guava).
6. The colour of guava cheese was found highest in treatment with T<sub>7</sub>, Guava pulp (90%) + Pineapple (10%) and lowest was found in treatment with T<sub>1</sub>, Guava pulp (100% guava).
7. The texture of guava cheese was found highest in treatment with T<sub>7</sub>, Guava pulp (90%) + Pineapple (10%) and lowest was found in treatment with T<sub>1</sub>, Guava pulp (100% guava).
8. The overall acceptability of guava cheese was found highest in treatment with T<sub>1</sub>, Guava pulp (90%) + Pineapple (10%) and lowest was found in treatment with T<sub>1</sub>, Guava pulp (100% guava).
9. The highest cost benefit ratio (1:1.84) was recorded in T<sub>1</sub>, Guava pulp (90%) + Pineapple (10%) and followed by 1: 1.58 in T<sub>7</sub>, Guava pulp (70%) + Pineapple (30%). However, all the other treatment were also significantly superior over the treatments.

CONCLUSION
Based on findings of the present experiment it may be concluded that treatment T<sub>1</sub>, Guava cheese + Pineapple (10%) was found superior in respect of all the parameters T.S.S
(10.44°Brix), pH (4.33) and overall acceptability score (7.34) after 90 days storage. The highest net returns (Rs. 139.37/Kg) and higher benefit cost ratio (1.84:1) was also found superior in T3 - Guava cheese + Pineapple (10%).

REFERENCES


