Studies on Preparation of Pedha Blended With Elephant Foot Yam

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Abstract: An acceptable pedha was prepared using khoa from standardized buffalo milk added with 15 parts of red pumpkin pulp into 85 part khoa and sugar was mixed @ 30 % by weight of khoa. The moisture range between 14.50 to 29.00, fat-22.00 to 17.00, protein-14.80 to 12.10, ash-2.32 to 2.90 and total solid-85.33 to 71.28 per cent, respectively. On an average the elephant foot yam pedha was found to be the overall acceptability score for T₁, T₂, T₃ and T₄ was 8.0, 8.37, 8.75 and 8.12, respectively. The cost of production of final product as 260, 258, 252 and 246 Rs / Kg for T₁, T₂, T₃ and T₄, respectively. 

Keyword: Pedha, Buffalo milk, Khoa, Elephant foot yam, Chemical and Sensory parameters .

I. Introduction

India is emerging as a highest milk production producing country in the world with an annual growth rate of 4.53 %. The current milk production of India is 139.10 MMT (NDDB Statistics, 2013). Out of the total milk production in India 46 % of milk is consumed as whole and 54 % is utilized for conversion into different dairy products. It is estimated that about 7 % of total milk in India is converted into concentrated milk product among which pedha is one of the product.

In India for all the classes of people the vegetables like bottle gourd, red pumpkin, elephant foot yam etc are popular and regular consumed vegetable. The elephant foot yam reduces the cholesterol percentage and blood pressure in the blood. It also used for treatment of cancer, weight loss, diarrhea and abdominal pain and gas. It is powerful antioxidant helping to slow the ageing process and prevent cardiovascular disease and stroke. The market demand for instant food and dairy products all over the world. The consumer seeing new taste with nutritional value with minimum cost. Hence taking into consideration in market demand were made to prepare the pedha blended with elephant foot yam.

II. Materials And Methods

2.1 Preparation of elephant foot yam pulp
Elephant foot yam vegetable purchased from local market were was hed with clean water. The skin was removed. Vegetable was cut in pieces/ slices with the help of knife and boil it pots. After smoothens of cutted pieces remove the water finally converted into homogenous pulp by using Delux pulp machine.

2.2 Preparation of pedha
The procedure given by Banerjee (1997) was followed. Buffalo milk was filtered through muslin cloth and standardized to 6 per cent fat. Milk was converted into khoa. The calculated amount of elephant foot yam pulp and sugar @ 30 per cent of khoa were added. Finally the mixture was heated on a low fire with stirring till the desired texture was obtained. The small rolls is rolled with hands carried 25.0 gm weight.

Fig I: Preparation of red pumpkin pedha
Receiving of buffalo milk
↓
Standardization (6.0 % fat & 9% SNF)
↓
Filtration
↓
Boiling of milk with continues stirring & scrapping
↓
Khoa
↓
Addition of elephant foot yam pulp, permitted food grade colour & sugar ( 30% weight by khoa)
↓
Continues stirring with wooden laddle with low flame up to desired texture
↓

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Spreading in tray and cooling

Small rolls with hand carried 25.00 gm weight

Packaging in butter paper

Storage at room temperature

2.3 Treatment details
T₁ - 0 parts of elephant foot yam pulp + 100 parts of Khoa by weight
T₂ - 10 parts of elephant foot yam pulp + 90 parts of Khoa by weight
T₃ - 15 parts of elephant foot yam pulp + 85 parts of Khoa by weight
T₄ - 20 parts of elephant foot yam pulp + 80 parts of Khoa by weight

The different levels were tried and compared with control (T₁)

2.4 Chemical analysis
Moisture content of pedha was determined by standard procedure described in Anonymous (1959). Fat content of pedha by method described in ISI : 1224 (Part II) 1977. Protein by microkjeldhal method as described in ISI (1981), Ash by ISI: (1981) and total solid by formula method.

2.5 Sensory evaluation
Sensory analysis was carried out by panel of Judges in respect of color and appearance, Flavour body & texture. Sweetness and overall acceptability by 9 hedonic scale developed by Quarter master Food and Container Institute USA (Gupta 1976)

2.5 Statistical method
The data were analyzed statistically by using the completely randomized block design as per method described by Panse and Sukhatme (1967). The significance was evaluated on the basis of critical difference.

III. Results And Discussion

3.1 Chemical composition
The chemical quality of finished product is presented in Table 1. The moisture content in the finished product of different treatment combinations were in the range of 14.67 to 28.72 per cent. The increasing moisture content was noted in the finished product, due to addition of varied proportion of elephant foot yam pulp in khoa. The fat content of elephant foot yam pedha in all combination was different. Which decreased from 22.15 (T₁) to 17.77 (T₄). This might be due to decreasing levels of khoa. The results obtained in the finished products were similar to those reported by Ghule (2012). Similarly protein, carbohydrate and ash content in the finished product decreased.

3.2 Sensory evaluation
The sensory scores given for various samples are presented in Table 2. Pedha samples in which 15 per cent elephant foot yam pulp was blended with khoa scored the highest score (8.75). It was observed that increasing proportion of foot yam pulp in the blended in the khoa increased the score of colour and appearance of pedha. The score in respect of body and texture ranged between 8.0 to 9.0 for T₁ and T₃ treatment combinations. The treatment T₃ was significantly superior over the rest of treatments. In case of flavour, the score recorded was highest in T₃. In case of sweetness the mean score ranged from 8.0 to 9.0. It was lowest in T₁ and highest in T₃.

3.3 Cost of production
The cost of finished product (Table 3) was Rs.260 for control pedha whereas, for other treatment it decreased as increased the elephant foot yam pulp. The cost of pedha with 15 per cent elephant foot yam was Rs. 8.00 per kg over control pedha.
Table 1. Chemical composition of elephant foot yam pedha (per cent)

<table>
<thead>
<tr>
<th>Treatments</th>
<th>Moisture</th>
<th>Fat</th>
<th>Protein</th>
<th>Total solid</th>
<th>Ash</th>
</tr>
</thead>
<tbody>
<tr>
<td>T&lt;sub&gt;1&lt;/sub&gt;</td>
<td>14.67</td>
<td>22.15</td>
<td>14.80</td>
<td>85.33</td>
<td>2.32</td>
</tr>
<tr>
<td>T&lt;sub&gt;2&lt;/sub&gt;</td>
<td>21.69</td>
<td>19.96</td>
<td>13.46</td>
<td>78.31</td>
<td>2.64</td>
</tr>
<tr>
<td>T&lt;sub&gt;3&lt;/sub&gt;</td>
<td>25.20</td>
<td>18.86</td>
<td>12.77</td>
<td>71.28</td>
<td>2.90</td>
</tr>
<tr>
<td>T&lt;sub&gt;4&lt;/sub&gt;</td>
<td>28.72</td>
<td>17.77</td>
<td>12.10</td>
<td>71.28</td>
<td>2.90</td>
</tr>
<tr>
<td>SE ±</td>
<td>0.024</td>
<td>0.046</td>
<td>0.011</td>
<td>0.014</td>
<td>0.014</td>
</tr>
<tr>
<td>CD at 5%</td>
<td>0.066</td>
<td>0.144</td>
<td>0.034</td>
<td>0.045</td>
<td>0.045</td>
</tr>
</tbody>
</table>

Table 2. Overall acceptability score of elephant foot yam pedha

<table>
<thead>
<tr>
<th>Treatments</th>
<th>Colour &amp; appearance</th>
<th>Flavour</th>
<th>Body &amp; texture</th>
<th>Sweetness</th>
<th>Overall acceptability</th>
</tr>
</thead>
<tbody>
<tr>
<td>T&lt;sub&gt;1&lt;/sub&gt;</td>
<td>8.0</td>
<td>8.0</td>
<td>8.0</td>
<td>8.0</td>
<td>8.0</td>
</tr>
<tr>
<td>T&lt;sub&gt;2&lt;/sub&gt;</td>
<td>8.0</td>
<td>9.0</td>
<td>8.0</td>
<td>8.5</td>
<td>8.37</td>
</tr>
<tr>
<td>T&lt;sub&gt;3&lt;/sub&gt;</td>
<td>9.0</td>
<td>9.0</td>
<td>9.0</td>
<td>9.0</td>
<td>8.75</td>
</tr>
<tr>
<td>T&lt;sub&gt;4&lt;/sub&gt;</td>
<td>9.0</td>
<td>9.0</td>
<td>8.0</td>
<td>8.5</td>
<td>8.12</td>
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<tr>
<td>SE ±</td>
<td>0.156</td>
<td>0.124</td>
<td>0.127</td>
<td>0.131</td>
<td>0.141</td>
</tr>
<tr>
<td>CD at 5%</td>
<td>0.464</td>
<td>0.378</td>
<td>0.380</td>
<td>0.408</td>
<td>0.437</td>
</tr>
</tbody>
</table>

Table 3. Cost of production of elephant foot yam pedha (Rs / kg)

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Particulars</th>
<th>Cost (Rs/ kg)</th>
<th>T&lt;sub&gt;1&lt;/sub&gt; Qty / kg</th>
<th>T&lt;sub&gt;1&lt;/sub&gt; Amt / kg</th>
<th>T&lt;sub&gt;2&lt;/sub&gt; Qty / kg</th>
<th>T&lt;sub&gt;2&lt;/sub&gt; Amt / kg</th>
<th>T&lt;sub&gt;3&lt;/sub&gt; Qty / kg</th>
<th>T&lt;sub&gt;3&lt;/sub&gt; Amt / kg</th>
<th>T&lt;sub&gt;4&lt;/sub&gt; Qty / kg</th>
<th>T&lt;sub&gt;4&lt;/sub&gt; Amt / kg</th>
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<tbody>
<tr>
<td>1</td>
<td>Khoa</td>
<td>200.00</td>
<td>1000</td>
<td>200.00</td>
<td>1000</td>
<td>190.00</td>
<td>950</td>
<td>190.00</td>
<td>950</td>
<td>180.00</td>
</tr>
<tr>
<td>2</td>
<td>Elephant foot yam pulp</td>
<td>80.00</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>Sugar</td>
<td>33.00</td>
<td>300</td>
<td>10.00</td>
<td>300</td>
<td>10.00</td>
<td>300</td>
<td>10.00</td>
<td>300</td>
<td>10.00</td>
</tr>
<tr>
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<td>Labour charges</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>Fuel charges</td>
<td>10.00</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>Miscellaneous charges</td>
<td>15.00</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>Total coat</td>
<td>260.00</td>
<td>258.00</td>
<td>258.00</td>
<td>258.00</td>
<td>258.00</td>
<td>258.00</td>
<td>258.00</td>
<td>258.00</td>
<td>258.00</td>
</tr>
</tbody>
</table>

IV. Conclusion

It may be concluded that the superior and nutritional quality red pumpkin pedha can be prepared by addition of 15 parts of red pumpkin pulp and 85 parts of khoa by weight basis with addition of 30 per cent sugar.

References