STUDIES ON STORAGE BEHAVIOUR OF KOKUM (GARCINIA INDICA CHOISY) FRUITS UNDER DIFFERENT STORAGE CONDITIONS


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ABSTRACT

The fresh ripe kokum fruits were kept for storage at ambient temperature (13.15-32.5 °C, 66.5% RH), cool chamber (14.30-20.30° C, 96% RH) and cold storage (10°C, 85-90% RH) to study their storage behaviour. The results indicated that the ripe kokum fruits could be successfully stored for 16 days in cold storage, 12 days in cool chamber and 10 days at ambient temperature. The rate of change in PLW, TSS, acidity, sugars and ascorbic acid contents of the fruit was found to be slower in cold stored fruits followed by cool chamber.

Kokum (Garcinia indica choisy) belonging to the family Guttiferae is considered to be superlative among the tropical fruits in its flavour and aroma. The tree is slender evergreen with drooping branches along with yellow juice present in the bark. The tree flowers from November to February and ripening of fruits is staggered from March to May. The ripe fruit is dark purple coloured or red with yellow tinge which contains 3-8 large seeds embedded in a red acid pulp. During fruiting season, lot of fruits goes waste due to inadequate storage facilities and there is paucity of information on the storage behaviour of kokum fruit. Therefore the present investigation was undertaken to find out cheaper and most efficient method of storage of kokum fruits.

The present study was undertaken in the Post-harvest Technology Laboratory, Department of Horticulture, College of Agriculture, Dapoli. The experimental fruits were obtained from the College Farm during normal fruiting season. For this purpose unwrapped 70 ripe kokum fruits were placed in plastic trays and kept for storage at three storage conditions viz., ambient temperature (13.15 to 32.5 °C, 66.5% RH), cool chamber (14.30 to 20.30° C, 96 % RH) and cold storage (10°C, 85-90 % RH). The cool chamber a two walled structure made up of bricks and fine sand, was constructed according to design given by Roy and Khurdiya (1982). The observations on physico-chemical composition were recorded at the time of harvest and at the end of storage period. The shelf life of fruits was terminated when there was excessive physiological loss in weight resulting in shrivelling. Data were analysed statistically according to methods given by Gomez and Gomez (1981). The standard analytical methods were followed for the determination of physiological loss in weight (PLW%), total soluble solids (TSS°Brix), sugars (total and reducing, %) and ascorbic acid (mg/100 gm).

It is evident from the data presented in fig 1 that the physiological loss in weight of the fruits was found to be increased throughout storage period irrespective of storage conditions. There was sharp increase in physiological loss in weight of the fruits when stored at ambient temperature, whereas the increase in PLW was found to be slow in fruits stored in cold storage. This might be due to low temperature and high relative humidity prevailing in cold storage. Similar observations were

Fig. 1. Effect of different storage conditions on physiological loss in weight (%) of ripe kokum fruits

The data presented in Table 1 clearly indicated that the total soluble solids and sugars were found to be increased throughout the storage period regardless of storage conditions. The increase in TSS and sugars of the fruit could be attributed due to the conversion of starch and other carbohydrates into soluble sugars. The highest values of TSS and sugars were recorded in the fruits stored at ambient temperature, whereas the least increase in TSS and sugars were noticed in cold storage fruits at the end of storage period. Similar results were reported by Ingle et al. (1982) and Paralkar (1985) in Sapota, Nair (1986) in kokum and Garande (1992) in Jamun fruit.

Table 1. Effect of storage conditions on chemical composition of kokum (Garcinia indica) fruits during storage.

<table>
<thead>
<tr>
<th>Storage conditions</th>
<th>Shelf life (B)</th>
<th>TSS (%)</th>
<th>Reducing sugars (%)</th>
<th>Total sugars (%)</th>
<th>Acidity (%)</th>
<th>Ascorbic acid (mg/100g)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>II</td>
<td>I</td>
<td>II</td>
<td>I</td>
<td>II</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>10</td>
<td>16.54</td>
<td>17.79</td>
<td>5.30</td>
<td>5.94</td>
<td>10.72</td>
</tr>
<tr>
<td>Cool chamber</td>
<td>12</td>
<td>16.54</td>
<td>17.67</td>
<td>5.30</td>
<td>5.91</td>
<td>10.72</td>
</tr>
<tr>
<td>Cold storage</td>
<td>16</td>
<td>16.54</td>
<td>17.59</td>
<td>5.30</td>
<td>5.88</td>
<td>10.72</td>
</tr>
<tr>
<td>S. Em. ±</td>
<td>0.292</td>
<td>0.215</td>
<td>0.224</td>
<td>0.008</td>
<td>0.314</td>
<td>0.053</td>
</tr>
<tr>
<td>CD at 5%</td>
<td>-</td>
<td>N.S.</td>
<td>-</td>
<td>0.023</td>
<td>-</td>
<td>0.056</td>
</tr>
</tbody>
</table>

I = At harvest, II = At the end of storage.
The acidity and ascorbic acid contents of the kokum fruit followed a continuous decrease throughout the storage period with the maximum decline was noticed in the fruits stored at ambient temperature followed by cool chamber. The minimum decrease in acidity was recorded by the fruits stored in cold storage. The decrease in acidity associated with the higher rates of respiration since acid forms the necessary respiratory substrate for this catabolic process in fruits. Similar findings were reported by Naik (1985) in mango and Nair (1986) in kokum fruit. The maximum retention of ascorbic acid (8.34 mg/100 gm) was noticed in the fruits stored in cold storage.

The data in respect of shelf life of kokum fruit clearly indicated that maximum shelf life was observed in fruits stored at cold storage (16 days) followed by cool chamber (12 days) and ambient temperature (10 days). Similar observations recorded by Nair (1986) in kokum fruit.

REFERENCES