Original Research Article

Evaluation of Biochemical Characters in Jamun Seed and Fruit (Syzygium cumini L.). Germplasm

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A B S T R A C T

The present study was conducted to evaluate five advanced germplasm of jamun for morphological and nutritional value during 2015-16 at the students Student’s Instructional Farm of Narendra Deva University Agriculture and Technology, Kumarganj Ayodhya (U.P.) India. A significant variation was detected for all traits suggested that there was considerable variability among germplasm. The protein content in jamun seed was recorded 1.35% (NJ12) to 1.89% (NJ6) whereas, in jamun fruit was recorded in range of 1.95% (NJ7) to 2.39% (NJ11) The crude fat content in jamun seed was recorded 0.54% (NJ7) -0.63% (NJ13) whereas, in jamun fruit was recorded in range of 0.82% (NJ13) to 0.91% (NJ7) The crude fibre content in jamun seed was recorded 3.43% (NJ11) -4.18% (NJ6) whereas, in jamun fruit was recorded in range of 2.13% (NJ6) -2.45 % (NJ7) The starch content in jamun seed was recorded 23.08% (NJ13) -24.41% (NJ12) whereas, in jamun fruit total starch was recorded in range of 16.08% (NJ6) -17.12 %(NJ12) The phytic acid content in jamun fruit was recorded NJ6(2.03 mg/100g) -NJ12(2.08mg/100g) Saponin content present moderately in all jamun germplasm. On the basis of overall germplasm were found superior NJ12, NJ6, NJ11, NJ7 and NJ13 utilized in further research work.

Keywords
Jamun, Phytic acid, Crude fibre

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Introduction

Jamun is an under exploited indigenous fruit tree of India belonging to family Myrtaceae. Syzygium cumini is an evergreen tree to a height of 25 m. It is also known as Jaam, Kalojaam, Jamun, Nerale Hannu, Njaval, Neredupandu, Jamblang, Jambolan, Black Plum, Plum, Dhat Plum, Jambolan Plum, Java Plum or Portuguese Plum. The tree is known to be native in India, Bangladesh, Nepal, Sri Lanka, Indonesia, and Malaysia (Ayyanar and Babu, 2012) and has been naturalized throughout Southeast Asia and the Pacific Islands (Dacanay, 2007). In the Philippines, it is found throughout the country and is one of the most popular fruits (Ramos and Bandiola, 2017). The tree is also grown in Myanmar,
Thailand, Nepal, Australia, Kenya, Zambia, Zimbabwe, Madagascar, Colombia, Cuba, Mexico, Brazil, and some parts of the United States of America particularly Florida and Hawaii (Sharma et al., 2012; Faria et al., 2011; and Swami et al., 2012). One hundred grams Jamun fruit comprises almost 83.70-85.80 g moisture, 0.70-0.13 g protein, 0.15-0.30 g fat, 14.00 g carbohydrate, 0.32-0.40 g ash, 0.30-0.90 g crude fiber, 8.30-15.00 mg calcium, 35.00 mg magnesium, 15.00-16.20 mg phosphorus, 0.30-0.90 g crude fiber, 8.30-15.00 mg calcium, 35.00 mg magnesium, 15.00-16.20 mg phosphorus, 0.32-0.40 g ash, 0.30-0.90 g crude fiber, 8.30-15.00 mg calcium, 35.00 mg magnesium, 15.00-16.20 mg phosphorus, 0.30-0.90 mg crude fiber, 8.30-15.00 mg calcium, 35.00 mg magnesium, 15.00-16.20 mg phosphorus, 0.30-0.90 mg crude fiber, 8.30-15.00 mg calcium, 35.00 mg magnesium, 15.00-16.20 mg phosphorus, 0.30-0.90 mg crude fiber, 8.30-15.00 mg calcium, 35.00 mg magnesium, 15.00-16.20 mg phosphorus, 0.30-0.90 mg crude fiber, 8.30-15.00 mg calcium, 35.00 mg magnesium, 15.00-16.20 mg phosphorus, 0.30-0.90 mg crude fiber, 8.30-15.00 mg calcium, 35.00 mg magnesium, 15.00-16.20 mg phosphorus, 0.30-0.90 mg crude fiber, 8.30-15.00 mg calcium, 35.00 mg magnesium, 15.00-16.20 mg phosphorus, 0.30-0.90 mg crude fiber, 8.30-15.00 mg calcium, 35.00 mg magnesium, 15.00-16.20 mg phosphorus, 0.30-0.90 mg crude fiber, 8.30-15.00 mg calcium, 35.00 mg magnesium, 15.00-16.20 mg phosphorus, 0.30-0.90 mg crude fiber, 8.30-15.00 mg calcium, 35.00 mg magnesium, 15.00-16.20 mg phosphorus, 0.30-0.90 mg crude fiber, 8.30-15.00 mg calcium, 35.00 mg magnesium, 15.00-16.20 mg phosphorus, 0.30-0.90 mg crude fiber, 8.30-15.00 mg calcium, 35.00 mg magnesium, 15.00-16.20 mg phosphorus, 0.30-0.90 mg crude fiber, 8.30-15.00 mg calcium, 35.00 mg magnesium, 15.00-16.20 mg phosphorus, 0.30-0.90 mg crude fiber, 8.30-15.00 mg calcium, 35.00 mg magnesium, 15.00-16.20 mg phosphorus, 0.30-0.90 mg crude fiber, 8.30-15.00 mg calcium, 35.00 mg magnesium, 15.00-16.20 mg phosphorus, 0.30-0.90 mg crude fiber.

Constituents that are reported in the seeds of Syzygium cumini are protein (6.3-8.5%), 1.18% fat, 16.9% crude fiber, 21.72% ash, 0.41% calcium, 0.17% phosphorus, fatty acids (palmitic, stearic, oleic and linoleic), fatty oils (30 g kg g/1), including lauric (2.8%), myristic (31.7%), palmitic (4.7%), stearic (6.5%), oleic (32.2%), linoleic (16.1%), malvalic (1.2%), and vernolic acid (3%) 41% starch, 6.1% dextrin, a trace of phytosteryl (β-sitosterol) and tannin (predominantly corilagin, ellagitannins, ellagic acid, gal-loylgalactoside and gallic acid) (6-19%) (Lock et al., 2009; Ranjan et al., 2011). The seeds of jamun fruit contains oils which comprises of 33.2% 1-chlorooctadecane, 8.02% decahydro-8aethyl-1,1, 9.24% tetratet-racontane, 5.29% 4-(2-2-dimethyl-6-6-methylene- cyclohexyl) butanol, 4a,6-tetramethylnapthalene, 5.15% Octadecane, 3.97% octacosane, 1.72% heptacosane and 1.71% eicosane (Kumar et al., 2009).

Materials and Methods

The present research work was carried out during season 2015-16. Five germplasm of jamun namely NJ6, NJ7, NJ11, NJ12 and NJ13 were collected from main experimental station of horticulture Narendra Deva university of agriculture kumarganj Ayodhya. The total mineral content was estimated by the method Total fat content was analyzed by A.O.A.C. method (1965). The content of crude fiber in dried sample of mango was analysed by the method as described by Hart and Fisher (1971). Starch was estimated through following anthrone reagent method, described by McCreedy et al., (1950). Phytic acid in the jamun seed and pulp has been analyzed by the method of Wheeler and Ferel (1971).

Results and Discussion

Maximum crude protein content in jamun seed was found in NJ6 (1.89%) and minimum value was found in NJ12 (1.35%) Raza et al., (2015) duly supported the above result and found crude protein in jamun seed 1.97% and in jamun fruit 2.15%.

Maximum crude fat content in jamun seed was found in NJ13 (0.63) minimum crude fat content was found in NJ7(0.54%) A similar result carried out by Suradkar et al., (2017), Ansari et al., (2017), Ali et al., (2013) maximum crude fibre content in jamun seed was found in NJ6 (4.18%) minimum value was found in NJ11(3.43%) Menakam and Venkatasubramanian (2017), Raza et al., (2015) closely supported the above result and reported crude fiber in jamun seed i.e. 4.19% and in jamun fruit i.e. 1.76 %. Maximum total starch content in jamun seed was found in NJ12 (24.41%) minimum value was found in NJ13 (23.08%).

Present findings are in the conformation with earlier work of Patel and Rao (2014) maximum phytic acid content in jamun fruit have been found in NJ12 (2.08mg/100g) minimum phytic acid content was found in
NJ6(2.03 mg/100g) Sood et al., closely correlated with the above results and observed Kasmal fruit contain low concentration of phytic acid. Saponin content is present in all jamun germplasm.

**Table.1 Biochemical composition in jamun fruit**

<table>
<thead>
<tr>
<th>Germplasm</th>
<th>Crude protein in jamun fruit</th>
<th>Crude fat in jamun fruit</th>
<th>Crude fiber in jamun fruit</th>
<th>Total starch in jamun fruit</th>
</tr>
</thead>
<tbody>
<tr>
<td>NJ6</td>
<td>2.13</td>
<td>0.88</td>
<td>2.13</td>
<td>16.08</td>
</tr>
<tr>
<td>NJ7</td>
<td>1.95</td>
<td>0.91</td>
<td>2.45</td>
<td>16.17</td>
</tr>
<tr>
<td>NJ11</td>
<td>2.39</td>
<td>0.90</td>
<td>2.34</td>
<td>17.00</td>
</tr>
<tr>
<td>NJ12</td>
<td>2.12</td>
<td>0.82</td>
<td>2.21</td>
<td>17.12</td>
</tr>
<tr>
<td>NJ13</td>
<td>2.07</td>
<td>0.82</td>
<td>2.28</td>
<td>16.41</td>
</tr>
<tr>
<td>SEm±</td>
<td>0.032486</td>
<td>0.00524</td>
<td>0.02562</td>
<td>0.02076</td>
</tr>
<tr>
<td>Cd at 5 %</td>
<td>0.101</td>
<td>0.016</td>
<td>0.080</td>
<td>0.065</td>
</tr>
</tbody>
</table>

**Table.2 Biochemical composition in jamun seed**

<table>
<thead>
<tr>
<th>Germplasm</th>
<th>Crude protein in jamun seed</th>
<th>Crude fat in jamun seed</th>
<th>Crude fiber in jamun seed</th>
<th>Total starch in jamun seed</th>
<th>Phytic acid in jamun fruit</th>
<th>Saponin in jamun fruit</th>
</tr>
</thead>
<tbody>
<tr>
<td>NJ6</td>
<td>1.89</td>
<td>0.62</td>
<td>4.18</td>
<td>23.15</td>
<td>2.03</td>
<td>Present</td>
</tr>
<tr>
<td>NJ7</td>
<td>1.80</td>
<td>0.54</td>
<td>3.86</td>
<td>23.29</td>
<td>2.06</td>
<td>Present</td>
</tr>
<tr>
<td>NJ11</td>
<td>1.53</td>
<td>0.60</td>
<td>3.43</td>
<td>24.13</td>
<td>2.06</td>
<td>Present</td>
</tr>
<tr>
<td>NJ12</td>
<td>1.35</td>
<td>0.61</td>
<td>4.05</td>
<td>24.41</td>
<td>2.08</td>
<td>Present</td>
</tr>
<tr>
<td>NJ13</td>
<td>1.45</td>
<td>0.63</td>
<td>3.87</td>
<td>23.08</td>
<td>2.04</td>
<td>Present</td>
</tr>
<tr>
<td>SEm±</td>
<td>0.04091</td>
<td>0.01191</td>
<td>0.01616</td>
<td>0.023</td>
<td>0.00284</td>
<td></td>
</tr>
<tr>
<td>Cd at 5 %</td>
<td>0.127</td>
<td>0.037</td>
<td>0.050</td>
<td>0.072</td>
<td>0.009</td>
<td></td>
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**References**


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