Studies on preparation of rosogolla from a blend of cow milk & soymilk

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Abstract
Rosogolla prepared from the blend of cow milk and soymilk is a rich source of high quality protein, fat, carbohydrate, vitamins, minerals and ash. This approach gave relatively cheaper product in the domestic market. Soya has high quality protein with minimum saturated fat. The finished product provides protection against Cancer, Anemia, Asthma, etc. and help people to take highly nutritious diet in their budget. Objective of this dissertation was to focus on blending ratio of cow milk & soymilk (100:00), (70:30), (60:40) and (50:50) for respective treatments T₀, T₁, T₂ & T₃ to assess chemical quality, organoleptic quality & estimation of the cost of production of rosogolla. The treatment were evaluated for various physico-chemical and sensory parameters. The organoleptic characteristics were evaluated by using 9 point hedonic scale. The highest mean score for overall acceptability percentage of rosogolla (8.20) was obtained for T₁. The fat %, protein %, carbohydrate %, moisture % and ash % of T₁ was found to be 5.92 %, 6.12 %, 41.34 %, 44.59 & and 2.02 % respectively. The highest cost (Rs./Kg) of rosogolla (147.34) was obtained for T₅ followed by T₃(129.55), T₂ (124.24) and T₁ (118.74) respectively.

Keywords: Cowmilk, soymilk, suger, citricacid, calciumsulphate, wheatfloor, backingpowder

Introduction
Rosogolla is the most important pleasant and charming foods to most of the people of the country. In Eid, Puja, birthday, marriage ceremony and in any party or any kind of entertainment either in domestic or national level, rasogolla area sued as one of the famed and demandable items. It is very nutritious for accounts of its fairly high protein, fat, minerals specially calcium and phosphorus and also fat- soluble vitamins particularity vitamin A and D. Despite and Datto (1993) defined rasogolla as the most popular Indian sweet meats that are valued for its characteristics texture. It is also a common milk product in India. Rosogolla prepared from the blend of cow milk and soymilk is a rich source of high quality proteins, fat, carbohydrate, vitamins, minerals, ash. This approach gave relatively cheaper product in the domestic market. Soya has high quality protein with minimum saturated fat. The finished product provides protection against Cancer, Anemia, and Asthma etc. and help people to take highly nutritious diet in their budget. India surpassed the United States as the world’s largest milk producing country. Annual growth rate in per capita production of milk [1994 – 2004] in India was > 2.5 %. But annual per capita milk consumption for developing countries like India had been reported as 31 kg / capita/ year only as compared to that of 93 kg in developing countries. This can be attributed to a sustained expansion in domestic demand, increase in the cost of milk and export of milk to developed countries. Health professional consider soy protein as superior protein. The amino acid pattern of soy protein is virtually equivalent in quality to that of milk and egg protein. The 1990’s FAO/ WHO protein evaluation committee puts soy protein at par with egg and milk protein and ahead of beef protein. Unlike many other good sources of protein, soybean not only has higher percentage of oil but also quality fatty acids profile.

Materials & Methods
Treatments studies for preparation of rosogolla from a blend of cow milk &soya milk was conducted in research laboratory Warner College of food &dairy technology shuats. sam higginbottom institute of agriculture technology and sciences.allahabad-211007

Collection of Ingredients
Cowmilk was parched from local market of Allahabad. Soyaseed was parched from local market of Allahabad.
Sugar was parched from local market of Allahabad.
Wheat flour & backing powder was parched from local market of Allahabad.
Citric acid & calcium sulphate was collected from the laboratory of the department of dairy technology.

Process flow diagram: Sock the soya seed for 8-9 hours for complete soaking after that follow the structured diagram:
Treatments combination & ratios
In this experimental dissertation work preparation of rosogolla from a blend of cow milk & soy milk has different treatment combinations explained as T0 prepared from only cow milk (100:00), T1 blending ratio of cow milk &soya milk was (70:30), T2 blending ratio of cow milk &soymilk was (60:40) T3 blending ratio of cowmilk &soy milk was (50:50) respectively.

Plan of work
Data were analyzed statistically by analysis of variance at 5% level of significance. where no of treatments & reapplications were frequent 4,5. Total no of trails conducted for rosogolla preparation were 20. Technical programs which involves chemical characteristics (moisture, fat, protein, carbohydrate & ash) along with organoleptic score parameters at 9point hedonic scale.

Result & Discussion
The present study was based to evolve “Studies on preparation of rosogolla from a blend of cow milk and soy milk”. The data collected on different aspects were tabulated & analyzed statistically using the methods of analysis of variance & critical difference. The significant & non-significant differences observed have been analyzed critically within & between the treatment combinations.

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Treatments</th>
<th>S.Ed value (±)</th>
<th>CD Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moisture</td>
<td>T0</td>
<td>46.24</td>
<td>44.59</td>
</tr>
<tr>
<td>Fat</td>
<td>T0</td>
<td>5.91</td>
<td>6.12</td>
</tr>
<tr>
<td>Protein</td>
<td>T0</td>
<td>5.88</td>
<td>5.77</td>
</tr>
<tr>
<td>Total Carbohydrate</td>
<td>T0</td>
<td>39.34</td>
<td>41.34</td>
</tr>
<tr>
<td>Ash</td>
<td>T0</td>
<td>1.63</td>
<td>2.02</td>
</tr>
</tbody>
</table>

Chemical Characterstics for Rosogolla
Moisture
In all above treatments & reapplication the highest mean score for moisture (%) of Rosogolla (46.24) obtained by control followed by T1(44.59), T2(43.11) & minimum score (42.11) obtained by T3, the difference in score for moisture of rosogolla was significant.

Fat
In all above treatments & reapplication the highest mean score for fat (%) of Rosogolla (6.91) obtained by control followed by T1(5.92), T2(5.77) & minimum score (5.38) obtained by T3, the difference in score for fat of rosogolla was significant.

Protein
In all above treatments & reapplication the highest mean score for protein (%) of Rosogolla (6.82) obtained by T3 followed by T2(6.12) & minimum score( 5.88) obtained by control. the difference in score for protein of rosogolla was significant.

Ash
In all above treatments & reapplication the highest mean score for Ash (%) of Rosogolla (2.66) obtained by T3 followed by T2(2.45), T1(2.02) & minimum score (1.63) obtained by control. the difference in score for Ash of rosogolla was significant.

Total carbohydrate
In all above treatments & reapplication the highest mean score for carbohydrate (%) of Rosogolla (43.03) obtained by T3 followed by T2(42.18), T1(41.34) & minimum score (39.34) obtained by control. the difference in score for carbohydrate of rosogolla was significant.

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Treatments</th>
<th>S.Ed value (±)</th>
<th>CD Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flavour &amp; taste</td>
<td>T0</td>
<td>7.96</td>
<td>8.36</td>
</tr>
<tr>
<td>Body &amp; texture</td>
<td>T0</td>
<td>8.24</td>
<td>8.28</td>
</tr>
<tr>
<td>Colour &amp; Appearance</td>
<td>T0</td>
<td>7.96</td>
<td>8.16</td>
</tr>
<tr>
<td>Overall Acceptability</td>
<td>T0</td>
<td>8.12</td>
<td>8.20</td>
</tr>
</tbody>
</table>

Cost of production (Rs/kg)
Cost (Rs/kg) | 147.34 | 129.55 | 124.24 | 118.74 |

Graph 1: The organoleptic scores of rosogolla of different treatments.
Organoleptic Characteristics

Coloure & appearance
In all above treatments & reapplication the highest mean score for coloure & appearance (%) of Rosogolla (8.16) obtained by T1 where control was (7.96) followed by T2(7.68) & T3(7.18), the difference in score for coloure & appearance of rosogolla was significant.

Body & texture
In all above treatments & reapplication the highest mean score for body & texture (%) of Rosogolla (8.28) obtained by T1 where control was (8.24) followed by T2(7.80) & T3(7.72), the difference in score for body & texture of rosogolla was significant.

Flavoure & taste
In all above treatments & reapplication the highest mean score for flavoure & taste (%) of Rosogolla (8.36) obtained by T1 where control was (8.12) followed by T2(7.76) & T3(7.64), the difference in score for flavoure & taste was significant.

Overall acceptability
In all above treatments & reapplication the highest mean score for overall acceptability (%) of Rosogolla (8.20) obtained by T1 where control was (8.12) followed by T2(7.76) & T3(7.64), the difference in score for overall acceptability was significant.

Table 2: Critical difference in Overall acceptability scores for control and experimental rosogolla of different treatments.

<table>
<thead>
<tr>
<th>Treatments</th>
<th>Average</th>
<th>T0 8.12</th>
<th>T1 8.20</th>
<th>T2 7.64</th>
<th>T3 7.76</th>
</tr>
</thead>
<tbody>
<tr>
<td>T0</td>
<td>8.12</td>
<td>0.08</td>
<td>0.48</td>
<td>0.36</td>
<td></td>
</tr>
<tr>
<td>T1</td>
<td>8.20</td>
<td></td>
<td>0.56</td>
<td>0.44</td>
<td></td>
</tr>
<tr>
<td>T2</td>
<td>7.64</td>
<td></td>
<td></td>
<td>0.12</td>
<td></td>
</tr>
<tr>
<td>T3</td>
<td>7.76</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CD</td>
<td>0.20</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Graph 2: Overall acceptability score for control & experimental rosogolla.

Cost analysis
In all above treatments & reapplication the highest mean score for cost (%) of Rosogolla (147.34) obtained by control followed by T1(129.55), T2(124.24) & minimum score (118.74) obtained by T3 respectively.

Conclusion
The results obtained from the present investigation revealed that value addition of Rosogolla can be done by blending cow milk and soya milk in different ratios satisfactorily. Though significance difference was found in most of parameters with respect to the different treatments, T1 (70% cow milk and 30% soymilk) was found to be the best in terms of chemical sensory parameters.

References