Effect of Different Levels of Singada flour on the Quality of Chhana poda

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ABSTRACT

In this study chhana poda was prepared and chemical qualities of were studied by using different levels of singada flour. In chemical properties fat, moisture, total solids, sugar were determined. After chemical analysis of chhana poda samples it was revealed from the study that, the fat content was found in the range of T1 (22.97%), T2 (22.53%), T3 (21.67%), T4 (21.62%) and T5 (21.17%) respectively. Total solids content was found in the range of T1 (66.04%), T2 (67.17%), T3 (68.57%), T4 (69.86%), T5 (71.15%), moisture content in chhana poda was found in the range of T1 (33.97%), T2 (32.86%), T3 (31.43%), T4 (30.15%), and T5 (28.87%) respectively, sugar content was found in the range of T1 (29.82%), T2 (29.35%), T3 (28.85%), T4 (28.37%) and T5 (27.90%),

Keywords Chhana poda, Sinagda flour

India has emerged as a large milk producer in the world with record production of milk 122.5 million tons in 2011-12 (Anonymous, 2011-12) of which approximately 40 percent is derived from cows. It is further documented that over 45 percent milk produced is utilized for value added products mainly through the unorganized sector. The conversion of milk into various milk products is gaining importance day by day to utilize the surplus milk in better way. About 45-50 per cent of milk in India is used in manufacture of various indigenous milk products.

Chhana is one of indigenous milk product obtained by acid coagulation of hot whole/standardized milk with subsequent removal of whey. The quantity of chhana is influenced by several factors viz. type and composition of milk, coagulation temperature, amount of moisture retained in the product and amount of total solids lost in whey. Chhana is well-known traditional dairy product which is used as the base and filer for the preparation of large variety of Indian delicacies eg, Rasgolla, Sandesh, Cham-Cham, Rasmalai, Pantooa, Rajbhog, Chhana-murkhi and Chhana poda of which rasogolla and sandesh are most popular in many parts of country. It is reported that about 10,00,000 metric tonnes of chhana is annually produced in India (Aneja, 1997).

Waterchestnut locally known as Singada (Trapa natans L.) is an aquatic herb occurring throughout the greater parts of India, in lakes, ponds and tanks. It is cultivated on large scale for edible fruits consumed fresh, boiled or roasted. Meal, prepared by grinding dried kernels, is used as substitute for cereals flour. It is also used during fast by the people and they tried use of singada starch for preparation of sweets like Halva, Gulaabjamun etc. Singada starch has got a higher nutritive value, than most of the staple food like rice and potatoes, containing more protein and minerals like calcium, phosphorus and iron. (UmraoSingh et al. 1983).

No published work on the use of singada flour for the preparation of Chhana poda. Thus, in the present investigation an attempt has been made to study “Effect of different levels of Singada flour on the quality of Chhana poda” and to standardize recipe combination, so that uniform quality of product will be obtained.

Therefore it is necessary to study the proper method of production of chhana poda and its suitability for human consumption for present study, further the binding material used is Singada powder which made for fried product useful for fast purpose and considering the Indian culture in context to fast it will help to increase the demand of product in market. This will help to halwai and cottage level. This treads production for development in market.

MATERIAL AND METHODS

The fresh composite milk procured from the herd maintained at Livestock Instructional Farm, Department of Animal Husbandry and Dairying, Post Graduate Institute, Dr.P.D.K.V.Akola. Citric acid LR grade Manufactured by M/S. Qualigens Fine Chemicals, Mumbai was used as coagulants. Cane sugar in crystalline form was purchased from the local market and utilized as treatment requirements. Good quality singada flour was purchased from local market and utilized as per treatment for preparation of chhana poda.

Experimental details

There would be five treatment combinations. Thus, there were five samples of chhana poda. Experimental design Complety Randomized Design (CRD) using five treatments and five replications.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Levels of Singada flour</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>0%</td>
</tr>
<tr>
<td>T2</td>
<td>2%</td>
</tr>
<tr>
<td>T3</td>
<td>4%</td>
</tr>
<tr>
<td>T4</td>
<td>6%</td>
</tr>
<tr>
<td>T5</td>
<td>8%</td>
</tr>
</tbody>
</table>

Flow chart of Chhana- Poda

```
<table>
<thead>
<tr>
<th>Milk (Fat 3.5%)</th>
<th>Filtration</th>
<th>Boiling</th>
<th>Cooling (70°C)</th>
<th>Coagulation (2%)</th>
</tr>
</thead>
</table>
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Draining of Whey
Chhana
Kneading
Addition of grinded sugar and Singada flour (As per treatment)
Addition of Baking powder
Mixing and kneading
Moulding
Baking (150°C/80min.)
Cooling
Packaging
Storage

Chemical analysis of chhana poda

The methods described were followed for analyzing the fat (AOAC, 1990), moisture, and total solids fat (IS:1479 part XI, 1960) and sugar fat (SP:18 Part I, 1981).

RESULT AND DISCUSSION

Chemical analysis of Chhana Poda

Fat content

The result on effect of different levels of Singada flour on the Fat content of Chhana Poda are tabulated in Table-1. The Fat content was noted to be lowest (21.17%) in case of 8 percent Singada flour (T5). While highest value (22.97%) was observed in treatment T1 (0 percent Singada flour). It was also found that moisture content was decreased due to increased in rate of addition of singada flour.

Total solids content

The result on effect of different levels of Singada flour on the Total solids content of Chhana Poda are tabulated in Table-1. It was revealed from table 1 that different level of Singada flour significantly affects the total solid content of chhana poda. The value of TS content was recorded as 66.04, 67.18, 68.57, 69.68 and 71.15 in treatment T1, T2, T3, T4, and T5 respectively. It means rate of addition of Singada flour is positively associated with total solid content. TS content in Chhana Poda observed in present investigation is in agreement with that reported by Ghosh et al. (1998) which ranged between 67-70 percent. Rajopadhye (2012) also found same trend in respect to TS of chhana poda prepared from wheat starch (70.92 to 72.72%).

Moisture Content

The result on effect of different levels of Singada flour on the Moisture content of Chhana Poda are tabulated in Table-1. It was observed from table 1 that the moisture content was lowest (28.87%) in case of 8 percent Singada flour (T5). The highest value 33.97% was observed in treatment T1 (0 percent Singada flour). Kumar et al. (2002) reported moisture in cow milk Chhana Poda ranged between 24.23 to 31.93 percent, while buffalo milk Chhana Poda ranged from 22.85 to 28.20 percent. These results noted by various researchers are in agreement with present trend of investigation. It might be due to presence of more TS in higher sugar and Singada levels.

Sugar Content

The result on effect of different levels of Singada flour on the Sugar content of Chhana Poda are tabulated in Table 1. The value recorded in table 1 clearly demonstrated that sugar content of chhana poda was significantly affected by the different levels of Singada flour.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Fat</th>
<th>Total solids</th>
<th>Moisture</th>
<th>Sugar</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>22.97</td>
<td>66.04</td>
<td>33.97</td>
<td>29.82</td>
</tr>
<tr>
<td>T2</td>
<td>22.53</td>
<td>67.18</td>
<td>32.86</td>
<td>29.35</td>
</tr>
<tr>
<td>T3</td>
<td>21.67</td>
<td>68.57</td>
<td>31.43</td>
<td>28.85</td>
</tr>
<tr>
<td>T4</td>
<td>21.62</td>
<td>69.86</td>
<td>30.15</td>
<td>28.37</td>
</tr>
<tr>
<td>T5</td>
<td>21.17</td>
<td>71.15</td>
<td>28.87</td>
<td>27.90</td>
</tr>
<tr>
<td>SE(m)</td>
<td>0.169</td>
<td>0.094</td>
<td>0.106</td>
<td>0.0324</td>
</tr>
<tr>
<td>CD at 5%</td>
<td>0.681*</td>
<td>0.375*</td>
<td>0.432*</td>
<td>0.1304*</td>
</tr>
</tbody>
</table>

Significant -* at 5 per cent. Non Significant -NS
due to different level of Singada flour. Sugar content was adversely affected due to increased rate of addition of Singada flour. The values of sugar content was 29.82, 29.35, 28.85, 28.35 and 27.90% in treatment $T_1$, $T_2$, $T_3$, $T_4$, and $T_5$ respectively. This value are near to the value noted by Dash et al. (1998) i.e. 24.11 to 26.25%, while the value noted by Rajopadhye (2012) are in the range of 25.72 to 29.82% which support the present results.

CONCLUSIONS

For preparation of chhana poda different levels of shingada flour used. In present result show that fat, moisture and sugar content was decreased with increased levels of shingada flour similarly total solid content was increased with levels of shingada flour increased.

LITERATURE CITED


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