Studies on sensory and microbial quality of herbal based flavoured beverage by using wheat grass powder and honey

Shimar Mishra, John David, SK Aktar Hossain, Prafull Kumar and Srishti Upadhyay

Abstract
Now a days, flavoured beverage become most nutritive for all age of people. In recent time, nutrient-rich flavored milk is available in different variety of flavors and offers unique nutrient package of nine essential nutrients as unflavored milk. The present study was conducted to know the sensory attributes of flavoured milk with Wheat grass powder and Honey. In this study, flavoured milk was prepared from toned milk. Honey was added with different levels viz. 7% (T1), 8% (T2), and 9% (T3) of milk and Wheat grass powder was added @ 8 percent of milk. Addition of wheat grass powder and honey improved sensory quality and acceptability of the product. The most acceptable quality flavoured milk could be prepared by using honey at the rate of 10 percent of the toned milk.

Keywords: wheat grass powder, honey, flavoured beverage

Introduction
Flavoured beverage are made in which sugar, flavouring agents, colouring material are added. It contains all the constituents of milk. It is good source of protein, carbohydrate, mineral and provides energy and water to digest the food, regulate body temperature and prevent dehydration. Flavoured beverage is available with traditional flavors such as chocolate as well as innovative flavours including strawberry, vanilla, mocha and root beer. As most popular beverage in schools, flavoured beverage is a highly palatable, nourishing beverage that can help particularly children to meet their current daily requirement to dairy food and calcium intake. Among the different flavors in flavored beverage (for example, chocolate, strawberry, and vanilla), chocolate milk is the most popular milk flavor for both children and adults in the United States Thompson et al., 2004) [11]. Despite the important nutrient contributions flavoured beverage makes to the diet, concerns about the potential effects of the added sugar and flavorings in flavored beverage have raised questions regarding the role of flavoured beverage in a healthy diet. Flavoured beverage can increase milk consumption among both adults and children and also provides essential nutrients like plain milk and other milk products (Murphy et al., 2008) [7].

In order to develop a holistic approach for the treatment of chronic diseases, scientists and clinicians world over are now a days, conducting extensive studies to evaluate the efficacy of wheat grass (in the form of powder or juice) and also for the better understanding of therapeutic potential of this medicinal grass (Rajesh et al., 2011). A study done on MCF-7 breast cancer lines with different extracts show highest free radical scavenging activity and the highest cell killing property (Tandon et al., 2011) [10], (Kulkarni et al., 2006) [6].

Materials and Methods
The present investigation “Studies on sensory quality of herbal based flavoured beverage by using wheat grass powder and honey” was carried out in the research laboratory of Warner College of Dairy Technology, Sam Higginbottom University of Agriculture, Technology & sciences, Allahabad, 211007, U.P India.

Procurement and collection of ingredients
a. Toned milk- It was purchased from Aggies Student Training Dairy, SHUATS, Allahabad
b. Wheat Grass Powder – It was procured from Patanjali Store at local market of Allahabad.

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Procurement and collection of ingredients
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b. Wheat Grass Powder – It was procured from Patanjali Store at local market of Allahabad.

Honey – It was procured from Patanjali Store at local market of Allahabad.
d. Colour – Apple green colour was purchased from local market of Allahabad.
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Treatment combination

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<table>
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<tbody>
<tr>
<td>T₀</td>
<td>Toned milk + Wheat grass powder extract (1%) + Sugar (7%).</td>
</tr>
<tr>
<td>T₁</td>
<td>Toned milk + Wheat grass powder extract (1%) + Honey (9%) + colour (0.2%).</td>
</tr>
<tr>
<td>T₂</td>
<td>Toned milk + Wheat grass powder extract (1%) + Honey (10%) + colour (0.2%).</td>
</tr>
<tr>
<td>T₃</td>
<td>Toned milk + Wheat grass powder extract (1%) + Honey (11%) + colour (0.2%).</td>
</tr>
</tbody>
</table>

Preparation of wheat grass powder extract

For preparation of wheat grass powder extract, 60 ml of distilled water was taken in a beaker. 1% wheat grass powder was added and mixed well in distilled water (5 gm. in 500 ml) and then the solution was subjected to heat treatment at 80 °C for 20 minute. Solution was strained through the muslin cloth.

Flow diagram for manufacturing herbal based flavoured beverage

```
Toned milk (3.0%Fat, 8.5%SNF)
  ↓
Pre-heating (40 °C)
  ↓
Addition of honey (@9%, 10%, 11%)
  ↓
Addition of wheat grass powder extracts (1% constant)
  ↓
Addition of colour
  ↓
Pasteurization 72°C for 15 sec
  ↓
Cooling at room temperature
  ↓
Botting
  ↓
Capping
  ↓
Storage below 5 °C
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Sensory and microbial evaluation

The flavoured milk prepared under different treatment combinations were subjected to sensory evaluation by a panel of judges for colour and appearance, flavour consistency and overall acceptability. The scoring was done on 9 point hedonic scale as described by (Gupta 1976) [3]. Standard plate count (SPC) and Coliform count of the product sample was estimated by the method as described in SP: 18 (Part XI) – 1981.

Statistical analysis

The data obtained were statistically analyzed for ANOVA using MS Excel software, 2007.

Sensory evaluation

It was observed from Fig. 1 that treatment T2 has the highest organoleptic score followed by T0, T1, and T3. The variation in sensory scores viz., flavour, colour and appearance, consistency and overall acceptability were found to be significantly different (P< 0.05). The score in respect of flavour ranged between 7.00 to 7.60. In case of consistency the score recorded seem to be highest for T2 (8.20) and lowest in T0 (7.00). In case of colour and appearance the score recorded seem to be highest for T2 (8.40) and lowest in T3 (7.40). In case of overall acceptability the score recorded seem to be highest for T2 (8.40) and lowest in T3 (7.00).

Microbiological analysis

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<table>
<thead>
<tr>
<th>Treatments</th>
<th>T0</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>CD Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPC (10⁴ cfu/ml)</td>
<td>10</td>
<td>9.20</td>
<td>10.20</td>
<td>11.80</td>
<td>1.42</td>
</tr>
<tr>
<td>Coliform test (10⁴ cfu/ml)</td>
<td>Nil</td>
<td>Nil</td>
<td>Nil</td>
<td>Nil</td>
<td>0.00</td>
</tr>
</tbody>
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*Average of five trials.

The highest mean S.P.C (x 10⁴) cfu/g was recorded in the sample of T₃ (11.80), followed by T₂ (10.20) and T₁ (10). There was significant difference between the treatments. None of the samples of Flavoured beverage samples showed the presence of the coliforms which indicates that proper hygienic conditions were maintained during the preparation and storage of the product.

Conclusion

Flavoured beverage with wheat grass powder proved to be a wheat one beverage for all age group. It is nutrition, relishing, and refreshing. The present studies conduct that the beverage made with 1% wheat grass powder and 10% honey form to be the best in sensory quality. The product has great market potential for commercial man population.

References