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Development of Functional Lassi

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Abstract

The Indian subcontinent's traditional fermented dairy beverage, Lassi is prepared from yogurt, curd, water, sugar, salt, spices and occasionally fruit. Modern variations of Lassi include functional ingredients including herbs, fruits, nuts and seeds to boost its functioning and nutritional worth. Studies on the making of Functional Lassi with Jaggery and Chia seeds have been done. The information gathered on various aspects were tabulated and statistically examined using analysis of variance techniques. Functional Lassi was prepared by incorporating curd with 8, 10 and 12 per cent Jaggery and 1, 2 and 3 per cent Chia seeds. The organoleptic characteristics, such as colour and appearance, body and texture, flavour, sweetness, and overall acceptability, were assessed in Lassi samples of various treatments and controls by trained panelist using a 9-point hedonic scale. Based on the results, it was determined that the among the combinations, Lassi with 10% Jaggery and 1% Chia seeds was found to be extremely acceptable by sensory evaluation.

Keywords: Lassi, jaggery, chia seeds, organoleptic evaluation

Introduction

The traditional fermented milk drink known as Lassi is originated in India and is enjoyed in many various forms throughout South Asia in different varieties. It is popular for its delectable flavour, cooling and thirst quenching qualities, and medicinal benefits. It has a creamy texture, sweetish rich aroma and a flavour that ranges from mild to acidic, all of which add to the product's reviving palatability. The sweet taste is preferred by the northern parts of the country, whereas southern regions favor the saltier version of the product. Due to the presence of beneficial bacteria that lubricates the intestine and facilitates easy digestion. It is a superior probiotic source and ensures the proper wellbeing and health of the person. Due to the presence of proteins, vitamins, minerals, metallic elements and numerous enzymes that the body needs, Lassi aids in converting food into energy and ensures high energy levels. It even aids in shedding excess fat, especially from the abdomen. It is a fantastic source of the system boosting carboxylic acid cholecalciferol. This enhanced mechanism accelerates the metabolism (Sharma *et al.*, 2022) ^[4].

Functional Lassi is a fermented dairy beverage with added value that contains nutrients from both dairy and non-dairy sources. The inquiry will look into the possibility of incorporating Jaggery and Chia seeds to Lassi.

Jaggery, sometimes known as gur, is a common, natural sweetener that is produced by concentrating the juice of sugarcane and is well known by a number of regional names. The fact that it contains all the vitamins and minerals present in the sugarcane juice makes the world's healthiest sugar. The majority of Jaggery is made and consumed in India. India accounts for more than 70% of global manufacturing. (Nath *et al.*, 2015) ^[3]. Jaggery is a type of sugar used in pharmaceutical formulations and is known as "medicinal sugar." Jaggery has a number of health benefits, including those for better digestion, liver cleansing, constipation relief, increased energy, blood purification, stress relief, treatment of bronchial infections and premenstrual syndrome. Additionally, it provides antitoxic and anti-carcinogenic effects. (Hirpara *et al.*, 2020) ^[2].

Chia seeds (*Salvia hispanica* L.), which are considered as ancient grains, rich in dietary fiber, phenolic compounds, the important fatty acid – linolenic acid, vitamins, minerals, and proteins. Protein from Chia seeds is gluten-free, and they have a greater protein level than typical cereals including wheat, barley, rye, oat, and rice. The protein content ranges from 15% to 23% (Ertop *et al.*, 2020) ^[1]. It is now frequently consumed for a variety of health advantages, particularly in maintaining a healthy serum cholesterol level. The chia seed's phenolic acid and omega 3/6 oil both contribute this action. Chia seeds are an ideal source of nutrients, including substantial amounts of calcium, magnesium and phosphorous. (Ullah *et al.*, 2016) ^[5].

Materials and Methods

Toned milk, Sugar, Potable water, Organic Jaggery, Chia seeds and lactic starter culture.

Preparation of Functional Lassi: The toned milk (3% fat and 8.5% SNF) was heated to 90 °C for 10 minutes and then cooled to 30 °C, followed by the addition of lactic starter culture at 2 per cent level. Then kept for incubation at 30 °C

for 12 hours. After the curd was set, breaking the curd with blender and mixed well. The Jaggery was added at 8, 10, and 12 per cent level. The Chia seeds were soaked in the potable water (50% of curd) and added to curd at three different levels such as 1, 2 and 3 per cent level on Lassi basis. Effect of Jaggery and Chia seeds on the sensory characteristics of the Lassi was studied. Then the Functional Lassi was subjected for sensory evaluation on 9-point Hedonic scale.

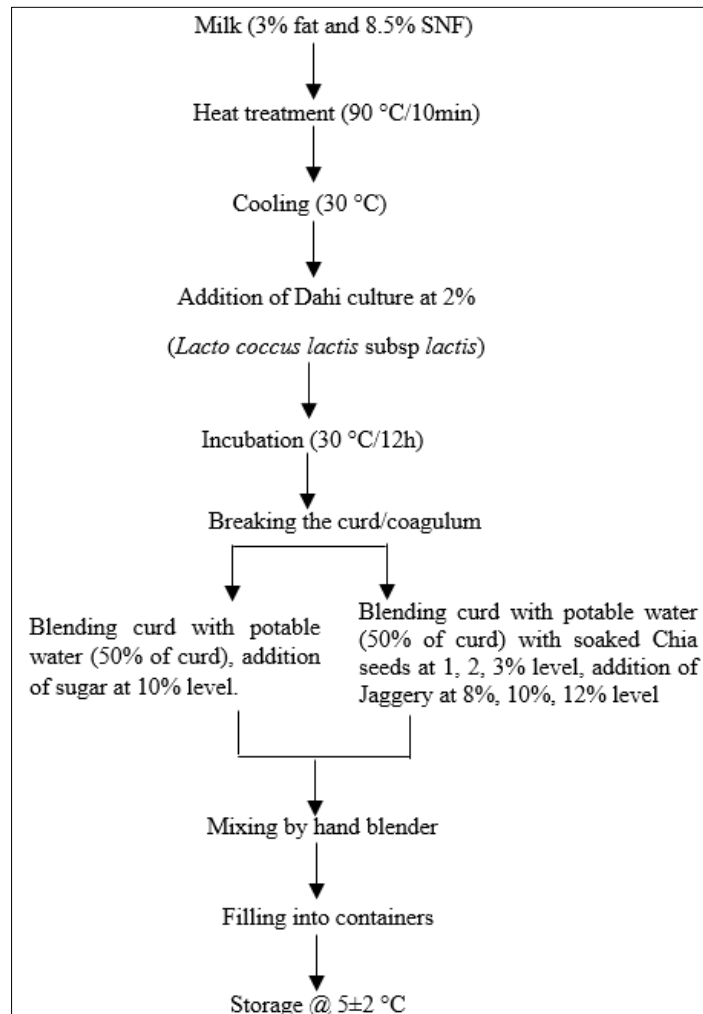


Fig 1: Preparation of control and Functional Lassi

Sensory evaluation of Lassi

The panel of five trained judges used a 9-point hedonic scale to assess the sensory quality of the Lassi made for this study.

Statistical design

Data were analyzed in SPSS and Excel using analysis of variance (ANOVA) and critical difference.

Results and Discussion

The findings of the current study and pertinent debates have been displayed under the following sub heads and Table 1 and Table 2.

Sensory evaluation of Lassi

Various treatment combinations of Jaggery and Chia seeds

were graded on their colour and appearance, body and texture, flavour, sweetness, and overall acceptability. Tables 1 and 2 provide a record of outcomes.

Treatment combination for optimization of Jaggery

- T₀- control with 10% sugar
- T₁- Lassi with 8% Jaggery
- T₂- Lassi with 10% Jaggery
- T₃- Lassi with 12% Jaggery

Treatment combination for optimization of Chia seeds

- T₀- Control with 10% sugar
- T₁- Lassi with 10% Jaggery and 1% Chia seeds
- T₂- Lassi with 10% Jaggery and 2% Chia seeds
- T₃- Lassi with 10% Jaggery and 3% Chia seeds

Table 1: Effect of different levels of Jaggery on the sensory characteristics of Lassi

Levels of Jaggery (%)	Colour and appearance	Body and texture	Flavour	Sweetness	Overall acceptability
Control	8.27 ^a	8.20 ^a	8.28 ^a	8.03 ^a	8.22 ^a
T ₁	7.83 ^b	7.47 ^b	7.52 ^b	7.40 ^b	7.38 ^b
T ₂	7.88 ^{ab}	7.92 ^{ab}	8.00 ^a	7.95 ^{ac}	8.03 ^a
T ₃	7.32 ^c	7.45 ^b	7.40 ^b	7.73 ^c	7.41 ^b
CD (P=0.05)	0.30	0.36	0.25	0.21	0.29

All the values are average of 3 trials

Similar superscripts indicate non-significance while different indicates statistically significant difference at the corresponding critical difference (CD)

The Lassi made with 10% Jaggery received the highest sensory scores for colour and appearance, body and texture, flavour, sweetness, and overall acceptability (7.88, 7.92, 8.00, 7.95 and 8.03 respectively). The 10% Jaggery in Lassi had the

desired colour, a moderate acidity, and a generally pleasing flavour. The colour of the Lassi turned darker brown as the Jaggery level increased. Which the judges did not find appealing.

Table 2: Effect of different levels of Chia seeds on the sensory characteristics of Lassi

Levels of Chia seeds (%)	Colour and appearance	Body and texture	Flavour	Sweetness	Overall acceptability
Control	8.07 ^a	8.02 ^a	8.03 ^a	8.03 ^a	7.97 ^a
T ₁	7.77 ^{ab}	7.92 ^a	7.97 ^a	7.93 ^a	8.00 ^a
T ₂	7.77 ^{ab}	7.83 ^b	7.92 ^a	7.77 ^a	7.95 ^a
T ₃	7.47 ^b	7.25 ^b	7.03 ^a	7.70 ^a	7.35 ^b
CD (P=0.05)	0.24	0.25	0.77	0.34	0.13

All the values are average of 3 trials

Similar superscripts indicate non-significance while different indicates statistically significant difference at the corresponding critical difference (CD)

The Lassi made with 10% Jaggery and different levels of Chia seeds were examined by the sensory panelists. After the sensory evaluation, the highest scores was received by Lassi made with 1% Chia seeds in respect to colour and appearance, body and texture, flavour, sweetness, and overall acceptability (7.77, 7.92, 7.97, 7.93, and 8.00 respectively). The panelist showed a preference for lower concentration of Chia seeds in Lassi. It had an acceptable colour and appearance and body and texture. The samples with highest Chia seeds inclusion were found to have a higher viscosity

Conclusion

It is possible to draw the conclusion that Functional Lassi made with 10% Jaggery and 1% Chia seeds, is more appreciated by all consumer groups. It is a nutritionally diversified product. A synergy of curd with Jaggery and Chia seeds improve the quality of product.

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