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## Studies on sensory evaluation of lassi blended with ginger (*Zingiber officinale*) extract

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### Abstract

The present investigation entitled "Studies on sensory evaluation of lassi blended with ginger (*Zingiber officinale*) extract" was undertaken in the Department of Animal Husbandry and Dairy Science, Dr. P.D.K.V., Akola, Maharashtra. In the present investigation the attempt was made to study the sensory properties of lassi blended with different levels of ginger extract using 9-point hedonic scale by panel of semi trained judges. The treatment details were T<sub>1</sub> control sample, T<sub>2</sub> (99% lassi +1 % ginger extract), T<sub>3</sub> (98% lassi + 2% ginger extract), T<sub>4</sub> (97% lassi + 3% ginger extract) and T<sub>5</sub> (96% lassi + 4% ginger extract). The treatment T<sub>4</sub> scored significantly highest scores for flavour, Body and Texture, colour and appearance and overall acceptability were found to be superior amongst all treatments. The acceptable quality of lassi can be prepared by using 3 (T<sub>4</sub>) percent ginger extract. The average mean score of flavour were 7.54 (T<sub>1</sub>), 7.68 (T<sub>2</sub>), 7.73, (T<sub>3</sub>), 8.15 (T<sub>4</sub>) and 7.83 (T<sub>5</sub>) respectively. The average mean score of colour and appearance were 7.52 (T<sub>1</sub>), 7.67 (T<sub>2</sub>), 7.74 (T<sub>3</sub>), 8.11 (T<sub>4</sub>) and 7.78 (T<sub>5</sub>) respectively. The average mean score of body and texture were 7.25 (T<sub>1</sub>), 7.47 (T<sub>2</sub>), 7.61 (T<sub>3</sub>), 8.10 (T<sub>4</sub>) and 7.71 (T<sub>5</sub>) respectively. The average mean score of overall acceptability were 7.44 (T<sub>1</sub>), 7.60 (T<sub>2</sub>), 7.69 (T<sub>3</sub>), 8.12 (T<sub>4</sub>) and 7.77 (T<sub>5</sub>) respectively.

**Keywords:** Lassi, ginger extract, sensory evaluation

### Introduction

Fermented milk plays a significant role in human nutrition as far as its therapeutic value is concerned. It has been reported that lactic acid bacteria produce acid such as lactic acid and acetic acid that inhibit the growth of many harmful bacteria especially pathogenic gram-negative types. Lassi is one of the most popular fermented dairy beverages in India prepared by the churning of curd. Lassi is proven to be an extraordinary nutritional material with all essential and non-essential amino acids. The rhizome of ginger contains curcumin in addition to a dozen of phenolic compounds known as gingerols and diarylheptanoids. Lassi is a fermented milk product made from about 10% of the country of India's total milk production. Indian-made traditional fermented milk beverages that are ready to serve and popular now account for a sizable portion of the domestic market.

Ginger is a monocotyledon, belonging to the family Zingiberaceae in the order Zingiberales. This family is divided into two subfamilies: Zingiberoideae and Costoideae. The subfamily Zingiberoideae includes the most important spice crop ginger (*Zingiber officinale*). It is a perennial horizontal root, having knots. It is tuberous and has a pungent aromatic taste (Agrawal *et al.*, 2015). Fresh ginger rhizome contains gingerol but after drying it is converted into zingerone. All these compounds have antioxidant and anti-inflammatory effect and can prevent the growth of cancer.

### Materials and Methods

#### Materials

Cow milk was obtained from livestock instructional farm of Department of Animal Husbandry and Dairy Science standardized at 4 percent fat level and fresh ginger was collected from local market of Akola. The freeze-dried culture of *Streptococcus lactis* was procured from National Culture Collection Unit, NDRI, Karnal (Haryana). Clean crystalline commercial-grade cane sugar was purchased from the local market of Akola city.

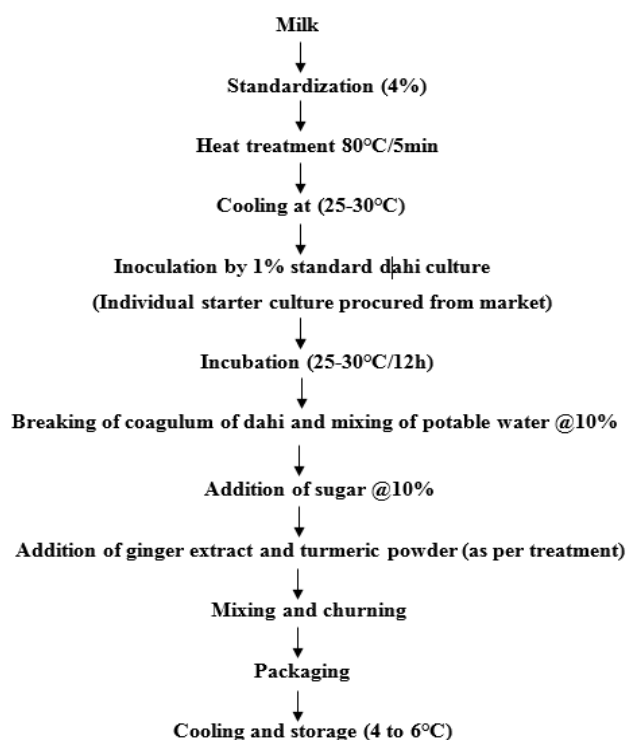
Plastic cups were used for storing and serving of lassi. Stainless steel vessels of requisite capacity, blender, knives, muslin cloth, standard weight balance, gas stove, etc. were used for preparation of lassi blending with ginger extract.

### Preparation of ginger extract

Fresh ginger was selected. The ginger was washed with running tap water to remove dirt and dust. For extraction of juice, it was cut into small pieces and then taken into electrically operated grinder cum mixer to make extract. Extract was filtered through 4-fold muslin cloth and obtained extract was used to mix at different levels during paneer preparation.

### Methods

Lassi was prepared following the method described by Tamba (2017) [8] with slight modification.



### Treatment Details

T<sub>1</sub> = 100 percent Lassi (control)  
 T<sub>2</sub> = 99 percent Lassi + 1 percent Ginger extract  
 T<sub>3</sub> = 96 percent Lassi + 2 percent Ginger extract  
 T<sub>4</sub> = 97 percent Lassi + 3 percent Ginger extract  
 T<sub>5</sub> = 96 percent Lassi + 4 percent Ginger extract

### Sensory evaluation of lassi blended with ginger extract

The acceptability of lassi blended with ginger extract was measured in term of sensory attribute such as flavour, body and texture, colour and appearance and overall acceptability of the product by the panel of the judges by using “9-point Hedonic scale” as prescribed by Nelson and Trout (1964) [4].

### Statistical analysis

The data obtained in the present investigation was tabulated. The data were analyzed statistically by using Completely Randomized Design (CRD).

### Results and Discussion

The acceptability of the control and experimental lassi was measured in terms of sensory attributes such as flavour,

colour and appearance, body and texture and overall acceptability by using 9-point hedonic scale by a panel of semi trained judges. The results obtained on account of this parameter were tabulated, statistically analysed and presented in Table 1.

### Flavour acceptability

From the Table 1. the mean flavour scores were 7.54, 7.68, 7.73, 8.15 and 7.83 for lassi prepared under T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub>, T<sub>4</sub> and T<sub>5</sub> treatments respectively. The highest score obtained for the flavour was treatment T<sub>4</sub> (8.15) containing 3 percent ginger extract over all treatments while the lowest score was obtained for treatment T<sub>1</sub> (7.54). These results are in agreement with Washimbe *et al.* (2020) [9] who prepared the lassi from the muskmelon pulp and lassi made with 5 percent muskmelon pulp were acquired highest score i.e., 8.88 and lassi made with 20 percent muskmelon pulp were acquired least score for flavour, 4.43. Mean score for taste of aloe vera juice added lassi. The results obtained in this study are in agreement with the result obtained by Girguse *et al.* (2024) [2] who reported that lassi prepared from guava pulp was superior in flavour up to a certain limit and thereafter it decreases proportionately. The flavour score was 5.75, 6.50, 6.75, 8.50 and 5.50, of lassi prepared with addition of guava pulp at 0 percent (T<sub>1</sub>), 5 percent (T<sub>2</sub>), 10 percent (T<sub>3</sub>), 15 percent (T<sub>4</sub>) and 20 percent (T<sub>5</sub>) respectively.

### Colour and appearance acceptability

It is observed that table 1 that the colour and appearance score of lassi was significantly affected due to addition of different levels of ginger extract. The score for colour and appearance of lassi were T<sub>1</sub> (7.52), T<sub>2</sub> (7.67), T<sub>3</sub> (7.14), T<sub>4</sub> (8.11) and T<sub>5</sub> (7.78). The highest score (8.11 out of 9) was obtained by lassi prepared with 3 percent ginger extract as compared to other treatment. Similar resulted finding was reported by (Sayyad, 2022) [6] as the basil leaf extract level increased in lassi, colour and appearance score was increased and then decreased.

### Body and Texture acceptability

The body and texture scores were 7.25, 7.47, 7.61, 8.10 and 7.71 for lassi prepared under T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub>, T<sub>4</sub> and T<sub>5</sub> treatments respectively. It was observed that the score for body and texture for all treatments was acceptable on 9-point hedonic scale securing more than 6 points. The highest score for body and texture was recorded for treatment T<sub>4</sub> (8.10) whereas the lowest score was recorded for treatment T<sub>1</sub> (7.25). Treatment T<sub>4</sub> was significantly superior to all treatments. The result obtained in this study are more or less in agreement with the result obtained by Washimbe *et al.* (2020) [9] who reported the work on musk melon lassi, obtained body and texture scores were 8.19, 8.75, 8.00, 7.38 and 6.63 for the treatment T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub>, T<sub>4</sub> and T<sub>5</sub>, respectively.

### Overall acceptability

The overall acceptability score was 7.44, 7.60, 7.69, 8.12 and 7.77 for lassi prepared under T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub>, T<sub>4</sub> and T<sub>5</sub> treatments respectively. The highest score for overall acceptability was recorded for treatment T<sub>4</sub> (8.42) because in all parameters *viz.*, flavour, colour and appearance and body and texture T<sub>4</sub> got a maximum score from a panel of judges that's why T<sub>4</sub> got maximum marks for overall acceptability whereas lowest score was recorded for treatment T<sub>1</sub> (7.55). The results obtained in this study are also more or less in agreement with the results obtained by Ingole *et al.* (2020) [3], who reported that the 2 percent ginger juice was superior in overall

acceptability than plain lassi.

**Table 1:** Overall average sensory evaluation of lassi blended with ginger extract

Treatment	Flavour	Colour and appearance	Body and texture	Overall acceptability
T <sub>1</sub>	7.54	7.52	7.25	7.44
T <sub>2</sub>	7.68	7.67	7.47	7.60
T <sub>3</sub>	7.73	7.74	7.61	7.69
T <sub>4</sub>	8.15	8.11	8.10	8.12
T <sub>5</sub>	7.83	7.78	7.71	7.77
*F' test	Sig	Sig	Sig	Sig
SE (m)±	0.0313	0.0202	0.0386	0.0204
CD at 5 %	0.0943	0.0608	0.1146	0.0613

## Conclusion

It is concluded from the present investigation that the lassi prepared with the incorporation of 3% (T<sub>4</sub>) ginger extract was found to be superior over the rest of the treatments. As the level of ginger extract in lassi increases change in sensory properties of lassi was observed.

## Conflict of Interest

Not available

## Financial Support

Not available

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