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## Studies on sensory evaluation of lassi prepared by using *Aloe vera* (*Aloe barbadensis* Miller.) juice

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### Abstract

The present investigation entitled Studies on sensory evaluation of lassi prepared by using *Aloe vera* (*Aloe barbadensis* Miller.) juice was undertaken during the year 2019-2020. Milk was fermented with starter culture to dahi and the lassi was prepared with different combinations of dahi and *Aloe vera* juice in proportion of 100:0 (T1), 96:4 (T2), 92:8 (T3), 88:12 (T4) and 84:16 (T5) with five treatments and four replications in completely randomized design (CRD). Sensory evaluation carried out by the five judges, showed the different levels of *Aloe vera* juice had a significant effect on sensory attributes such as flavour and taste, body and texture, acidity, colour and appearance and overall acceptability of *Aloe vera* lassi. Lassi prepared by blending with 8 parts of *Aloe vera* juice (T3) had secured the highest score (41.24).

**Keywords:** Milk, *Aloe vera* juice, lassi, sensory evaluation

### Introduction

Lassi is described as a fermented milk beverage obtained after the growth of selected culture, usually lactic streptococci in heat treated whole or partially skimmed milk followed by sweetening with sugar. (Krishna *et al.* 2013) [1]. Lassi is the ultimate probiotic; it provides a natural means of promoting the proper intestinal flora. Several varieties of lassi are popular in India. Among them herbal lassi is easy and cheaper to prepare.

Medically, the aloe plant is known to contain vitamins A (beta-carotene), C, and E, which are antioxidants. It also contains vitamins B12, folic acid and choline. Antioxidants neutralizes free radicals. *Aloe vera* contains 8 types of enzymes: aliase, alkaline phosphatase, amylase, bradykinase, carboxypeptidase, catalase, cellulose, lipase, and peroxidase. Bradykinase helps to reduce excessive inflammation when applied to the skin topically, while others help in the breakdown of sugars and fats. *Aloe vera* provides minerals like calcium, chromium, copper, selenium, magnesium, manganese, potassium, sodium and zinc. They are essential for the proper functioning of various enzyme systems in different metabolic pathways and few are antioxidants. *Aloe vera* provides sugars like monosaccharides (glucose and fructose) and polysaccharides (glucmannas/polymannose) which are antiallergic and anti-inflammatory properties. It also provides 12 types of anthraquinones, which are phenolic compounds traditionally known as laxatives. Aloin and emodin acts as analgesics, antibacterial antivirals. *Aloe vera* provides 4 types of fatty acids and steroids; cholesterol, campesterol, B-sisosterol and lupeol. All these have anti-inflammatory action and lupeol also possesses antiseptic and analgesic properties. Hormones like auxines and gibberellins that helps in wound healing. It provides 20 of the 22 required amino acids and 7 of the 8 essential amino acids. (Surjushe *et al.* 2008) [3].

*Aloe vera* may serve as natural herbal additives due to its aromatic properties. *Aloe vera* in addition with lassi provides an excellent nutritional and therapeutic value. The cost of dairy products has risen considerably over the year, which has given an input to the development of a wide range of substitutes with cost effectiveness, nutritional superiority, ease of manufacture, increased shelf-life and good functional properties of dairy products. The market demand for instant food and Lassi is growing all over the world and consumers are seeing new tastes and maintain a healthy and nutritional ration, when consumed as part of diets. The industry must consider providing milk product like lassi with herbal flavour and fortification. Their demand is to value addition milk and milk product due to change in life style, health and nutritional concern. So, lassi drink prepared with addition of *Aloe vera* juice as herbal additive milk is worth buying and consuming value added herbal product of future.

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The hypothesis for investigation provided the herbal product in the suitable combination of *Aloe vera* juice and lassi.

### Materials and Method

The research work entitled "Utilization of *Aloe vera* juice for preparation of lassi" was undertaken in the Animal Husbandry and Dairy Science Section, College of Agriculture, Nagpur during the year 2019-20. The material and experimental procedure used during the present studies are given as below.

#### Material required

Fresh, clean, whole cow milk was used for lassi preparation. For each trial, cow milk was procured from the section of Dairy Science and Animal Husbandry, College of Agriculture Nagpur. *Aloe vera* (*Aloe vera* spp.) taken from the section of Horticulture, college of Agriculture, Nagpur and used for the project work. Fresh leaves of medium size, matured and green colour were selected and cut from the plant and used for juice preparation. Clean, crystalline sugar was obtained from local market. Sugar @ 15.0 percent by weight of curd was common in all the treatments. Chilled water @ 10% by weight of curd was common in all treatments. The starter culture obtained from local market in Nagpur city was used to prepared curd from fresh standardized milk. Inoculation was done by using 2 percent starter culture for fermentation process.

#### Preparation of *Aloe vera* Juice

Freshly picked *Aloe vera* leaves were washed under tap water to remove dust and dirt. The leaves cut from bottom as well as both sides and allow to soak for 15 min. To remove yellow exuded which is toxic. The slimy mucilage and transparent gel taken out with the help of peeler. The green part removes properly and the *Aloe vera* gel was then macerated in a grinder and subsequently filtered through muslin cloth to separate the fiber and get the juice as per treatments which is use for the study.

#### Method adopted

##### Plan of work

This experiment was done with five treatments and four replications for preparation of lassi. The levels of *Aloe vera* juice in lassi were given below

##### Treatments details

Milk was fermented with starter culture to dahi and the lassi was prepared with different combinations of dahi and *Aloe vera* juice in proportion of 100:0 (T<sub>1</sub>), 96:4 (T<sub>2</sub>), 92:8 (T<sub>3</sub>), 88:12 (T<sub>4</sub>) and 84:16 (T<sub>5</sub>) with five treatments and four replications in completely randomized design (CRD).

##### Procedure for preparation of *Aloe vera* lassi.

Standardized cow milk was heated to 63 °C for 30 min and mixed thoroughly and cooled to 22-25 °C. The milk was inoculated by adding 2 percent starter culture. The sterilized plastic cups of 150ml capacity were filled with 100 ml of inoculated milk and covered with plastic lid. The filled cups were incubated at 37 °C for 12 hrs. incubator to obtain good quality of dahi. The set dahi was broken by slow agitation using domestic mixer. The *Aloe vera* juice, sugar and potable water were properly mixed with dahi in order to have a homogeneous mixture of lassi. The prepared *Aloe vera* lassi was packed in 150 ml sterilized plastic cups and stored in refrigerator at 4 °C. to 6 °C.

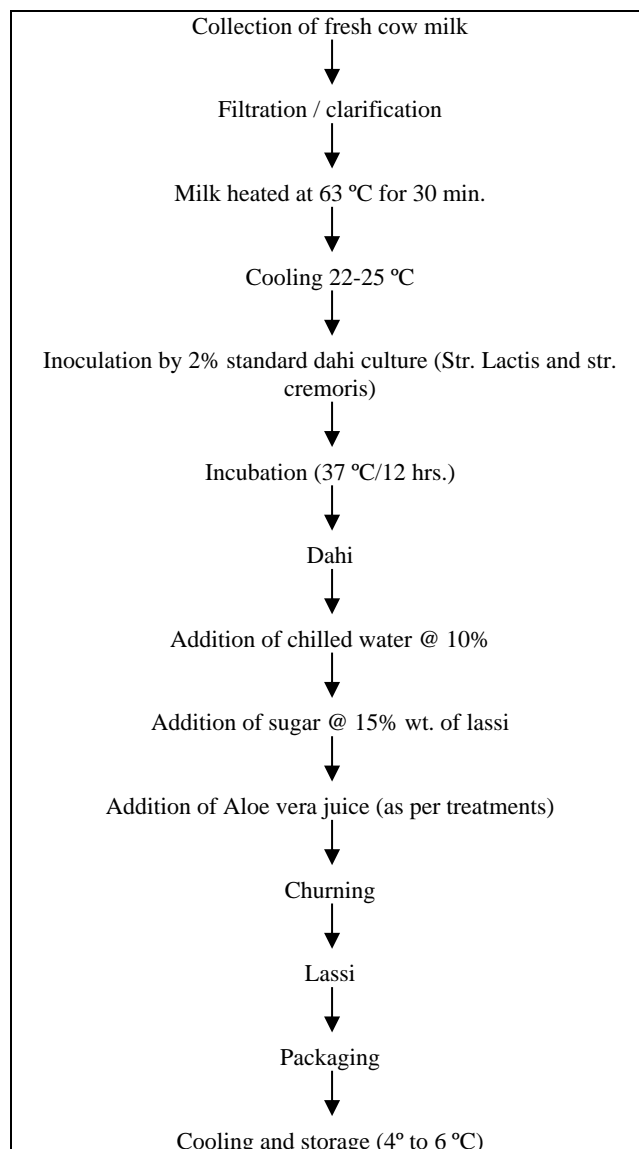


Fig 1: Flow diagram Preparation of lassi

### Result and Discussion

#### Sensory evaluation of *Aloe vera* lassi

The sample of *Aloe vera* lassi prepared under five treatments and four replications was evaluated by panel of five judges for sensory evaluation. A 9 point hedonic scale prescribed by Nelson and Trout (1964) were used for judging different quality attributes of *Aloe vera* lassi.

#### Sensory qualities of lassi

##### Flavour and taste score

The score for flavour and taste was increased upto T<sub>3</sub> i.e. 8 percent addition of *Aloe vera* juice, thereafter score was declined simultaneously. The highest score (8.09) was obtained by the treatment T<sub>3</sub> i.e. at 8 percent level of *Aloe vera* juice and the lowest score (7.04) was obtained by treatment (T<sub>1</sub>) i.e. lassi without *Aloe vera* juice.

##### Body and texture score

The highest score (8.29) was obtained by the treatment T<sub>3</sub> i.e. at 8 percent level of *Aloe vera* juice and the lowest score (7.43) was secured by in treatment (T<sub>1</sub>) i.e. lassi with 0 percent addition of *Aloe vera* juice. The significant score was (8.39) received by lassi prepared with 8 parts of *Aloe vera* juice i.e. T<sub>3</sub> treatment which was superior treatment in respect of body and texture of *Aloe vera* lassi.

### Colour and appearance score

The highest score (8.38) was obtained by the treatment T<sub>3</sub> i.e. at 8 percent level of *Aloe vera* juice and the lowest score (7.42) was secured by in treatment (T<sub>1</sub>) i.e. lassi with 0 percent addition of *Aloe vera* juice.

### Acidity score

The highest score (8.31) was obtained by the treatment T<sub>3</sub> i.e. at 8 percent level of *Aloe vera* juice and the lowest score (7.15) was secured by in treatment (T<sub>1</sub>) i.e. with 0 percent addition of *Aloe vera* juice.

### Overall acceptability

The highest score (8.38) was obtained by the treatment T<sub>3</sub> i.e. at 8 percent level of *Aloe vera* juice and the lowest score (7.42) obtained for treatment (T<sub>1</sub>) i.e. lassi with 0 percent addition of *Aloe vera* juice. On the basis of results obtained it was observed that amongst different levels of *Aloe vera* juice T<sub>3</sub> treatment (8 percent *Aloe vera* juice) was found more acceptable by the judges.

**Table 1:** Score of Overall acceptability of lassi prepared with different levels of *Aloe vera* juice on the basis of 9 point Hedonic scale.

Sr. No.	Treatments	R-I	R-II	R-III	R-IV	Mean
1	T <sub>1</sub>	7.30	7.43	7.45	7.48	7.42 <sup>e</sup>
2	T <sub>2</sub>	7.89	7.98	8.02	7.92	7.95 <sup>d</sup>
3	T <sub>3</sub>	8.45	8.33	8.40	8.35	8.38 <sup>a</sup>
4	T <sub>4</sub>	7.65	7.70	7.77	7.80	7.73 <sup>b</sup>
5	T <sub>5</sub>	7.42	7.55	7.58	7.61	7.59 <sup>c</sup>
S.E.(m)±		0.045				
C.D. at 5%		0.138				
Result		Sig.				

From the Table 1, the mean scores for overall acceptability of lassi were 7.06, 7.45, 8.17, 7.97 and 7.75 prepared in the proportion of 100:0 (T<sub>1</sub>), 96:4 (T<sub>2</sub>), 92:8 (T<sub>3</sub>), 88:12 (T<sub>4</sub>) and 84:16 (T<sub>5</sub>) curd to *Aloe vera* juice, respectively.

Hence, it is concluded that increased in the levels of *Aloe vera* juice resulted in better overall acceptability score of lassi at 8% *Aloe vera* juice addition

Lowest cost of production Rs. 55.90 per kg was calculated in case of lassi prepared with addition of 16 percent *Aloe vera* juice (T<sub>5</sub>) and the highest cost of production was Rs. 61.30 per kg in case of lassi prepared without addition of *Aloe vera* juice (T<sub>1</sub>). This was due to increase in the levels of *Aloe vera* juice. However the cost of production of lassi prepared with 8 percent *Aloe vera* juice (T<sub>3</sub>) was found to be Rs. 58.90 per kg which is best treatment selected by judges by sensory evaluation.

### Conclusion

It may be concluded from the present study that, Lassi prepared with addition of 92 parts of dahi and 8 parts of *Aloe vera* juice (T<sub>3</sub>) scored highest marks for all sensory attributes, viz. flavour and taste, body and texture, acidity and colour and appearance as compared to lassi with addition of dahi and *Aloe vera* juice in proportion of 100:0(T<sub>1</sub>), 96:4(T<sub>2</sub>), 88:12(T<sub>4</sub>) and 84:16(T<sub>5</sub>) parts. The cost of lassi gradually decreased with the increased in the levels of *Aloe vera* juice. The cost of most acceptable treatment prepared with addition of 8 parts of *Aloe vera* juice (T<sub>3</sub>) was Rs.58.90 per Kg. Hence, it may be concluded that best quality lassi can be prepared by addition of 8 parts of *Aloe vera* juice and 92 parts of dahi with 15% sugar.

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