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Chemical composition of flavoured milk enriched with lemongrass juice

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Abstract
The results of present study, it was concluded that lemongrass juice could be successfully utilized for preparation of flavoured milk. Addition of lemongrass juice 37.5 in flavoured milk improved sensory quality and acceptability of the product. The most acceptable quality flavoured milk could prepared by using lemongrass juice at the rate of 7.5 per cent of the buffalo skim milk and it contained total solids, fat, protein, ash, total sugar and titratable acidity as 18.91, 0.52, 3.21, 0.919, 15.15 and 0.168 per cent, respectively.

Keywords: flavoured milk, lemongrass juice (*Cymbopogon citratus*) sensory physicochemical analysis

Introduction
Flavoured milks are milks to which some flavours have been added. When the term 'milk' is used, the product should contain a milk fat percentage at least equal to the minimum legal requirement for market milk. But when the fat level is lower (1-2%) then the term „drink" is used. Flavoured milk is one of the special milks prepared which contains all the constituents of milk like proteins, carbohydrates and minerals. Besides, sugar, flavouring agents, colouring matter are also present in this beverage. Flavoured milk provides energy,
water to digest food, regulates body who don't relish it as such.
Incorporation of fruit and fruit products in the milk products helps to render good flavour and increases its palatability and nutritive value. With the advent of new techniques in manufacturing, processing, packaging, transportation and preservation, food technologists show interest in innovating the new combination of fruits and fruit products with popular milk product.
The fruits which are popular among the Indians, if added to the milk shake, not only improves its acceptability among average Indian people, but also improves its nutritional quality with the addition of essential vitamins and minerals. At the same time, it will give good market to the preserved food products which is ultimately going to help the farming community engaged in fruit production, preservation and also dairy production.

Treatment details
Flavoured milk was prepared by using four different levels of lemongrass juice, control treatment i.e. without papaya pulp.

The treatment details study were
1. T_0 – 0% lemongrass juice+ 8% of sugar
2. T_1 – 2.5% lemongrass juice+ 8% of sugar
3. T_2 – 5% lemongrass juice+ 8% of sugar
4. T_3 – 7.5% lemongrass juice+8% of sugar
5. T_4 – 10% lemongrass juice+8% of sugar

Materials and Methods
For preparation of flavoured milk, buffalo milk was received from local market, College of Agricultural Biotechnology, nashik, whereas lemongrass juice, gelatin, and sugar were purchased from the local market.
The flavoured milk was prepared as per procedure given by Mr. Balasaheb Sonwalkar (M.Sc.) Student, Department of Animal Husbandry and Dairy Science, Dr. B.S. Konkan Krishi Vidyapeeth (Agricultural University), Dapoli, Maharashtra, India (2016 -17) with slight modifications. Some preliminary trials were conducted to determine the range and appropriate stage of lemongrass juice for incorporation in buffalo skim milk. The trials with four levels of lemongrass juice (2.5, 5, 7.5, 10) percent lemongrass juice.

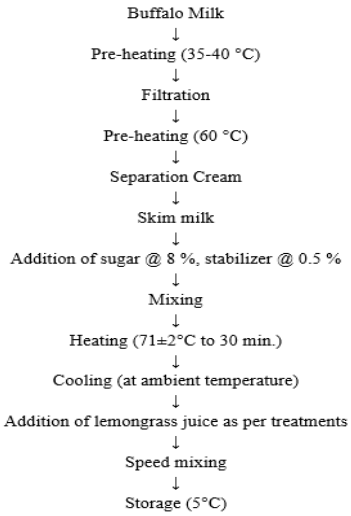

Fig 1: Flow diagram for preparation of flavored milk

T_0 Treatment was made from buffalo milk (100%) without addition of lemongrass juice whereas experimental samples of *flavoured milk* were prepared by using juice @ 2.5%, 5%, 7.5% and 10% with same sugar level (08%). Milk was transferred into pan and boiled at 70-80ºc, continuous stirring by wooden scoop in circular motion of the pre–heating@35-40 ^{0}C. Filtaration again pre–heating@ 60 ^{0}C then seperation of cream by scream separator. Buffalo skim milk was preapared.
In that s Kim milk addition of sugar @ 8 %, stabilizer @ 0.5 % mixed it well.
After addition constantly stirring the product. And Heating (71±2°C to 30 min.)
On slim gas flame the based on protocol. Cooling and setting at room temperature. Addition of lemongrass juice as per treatments and Speed mixing of flavour. Stored in refrigerator @5ºC.
The product was evaluated sensory evaluation on the basis of 9 point hedonic scale. The data collected on different aspects were tabulated and analysed statically by using ANOVA method.

Result and Discussion

The present investigation was undertaken to evaluate the chemical and physicochemical analysis of flavoured milk enriched with different levels of lemongrass juice.

Table 1: Physicochemical analysis of flavoured milk enriched with lemongrass juice

Treatment	Total solid	Fat	Protein	Ash	Titrable acidity
T_0	18.1	0.53	3.56	2.62	0.847
T_1	18.2	0.43	3.44	1.64	0.899
T_2	18.7	0.52	3.2	1.39	0.930
T_3	19.5	0.55	3.39	1.34	0.960
T_4	18.8	0.40	3.08	1.20	0.883
S.E	1.14	0.17	0.21	1.19	0.42

Conclusion

Total solids

The total solid content of flavoured milk increased significantly with increase in level of lemongrass juice. The average values for 2.5, 5, 7.5 and 10 per cent levels of lemongrass juice were 18.2, 18.7, 19.5 and 18.8 per cent, respectively.

Fat

The fat content of flavoured milk varies significantly with the values of 0.43, 0.52, 0.55 and 0.40 per cent at 2.5, 5, 7.5 and 10 per cent level of lemongrass juice, respectively. With increase in the level of lemongrass juice, there was significant decrease in the fat content.

Protein

The protein content of flavoured milk varied significantly with the values of 3.44, 3.2, 3.39 and 3.08 per cent at 2.5, 5, 7.5, and 10 per cent level of lemongrass juice, respectively. With the increase in the level of lemongrass juice, there was significant decrease in the protein content of flavoured milk.

Ash

The ash content of flavoured milk increased significantly with increase in the level of lemongrass juice. The average values for 2.5, 5, 7.5 and 10 per cent level of lemongrass juice were 1.64, 1.39, 1.34 and 1.20 per cent, respectively.

Titratable acidity

A difference in the titratable acidity due to lemongrass juice was statistically significant with the values being 0.899, 0.930, 0.960 and 0.883 per cent at 2.5, 5, 7.5 and 10 per cent level of lemongrass juice. There was increase in the acidity with increase in the level of juice.

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