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Studies on sensory analysis of low fat muskmelon *lassi*

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Abstract
The Study was conducted on the topic "Studies on Qualities of Low Fat Muskmelon *Lassi.*" The different levels of muskmelon pulp 5 parts, 10 parts, 15 parts and 20 parts were tried in low fat *lassi*. The product obtained for organoleptic evaluation by panel of judges. It was observed that flavour score were T1, T2, T3, T4 and T5 treatments were 8.38, 8.88, 8.06, 7.69 and 6.88, respectively. Body and texture were T1, T2, T3, T4 and T5 treatments were 8.19, 8.75, 8.00, 7.38 and 6.63, respectively. Colour and appearance scores for the treatments T1, T2, T3, T4 and T5 were 8.25, 8.81, 8.19, 7.50 and 6.81, respectively. It was observed that the overall acceptability score for sensory was 8.31, 8.94, 8.13, 7.25 and 6.69 respectively. It was clear that the level of 5 parts of muskmelon pulp low fat *lassi* have highest overall acceptability.

Keywords: Low fat, *lassi*, sensory, muskmelon.

Introduction
Fermentation is a metabolic mechanism by which, sugar transforms into acids, gases or alcohol and improves the product's shelf life while enhancing the taste and digestibility of milk. Among the different Indian milk products, fermented milk products are a class of traditional milk products since *vedic* times in India. There are a variety of these products throughout India. The popular products in this category are *Dahi*, *Lassi,* Butter Milk, Majjige, Kadhi, Raita, Curd Rice, Misthi *Dahi*, *Shrikhand*, etc. The consumption of fermented products is believed to add value to health attributes and also improve the quality of life (Aneja *et al*. 2002) [1].

Among the various fermented milk products, *Lassi* is one of the thirst beverages. *Lassi* is popular indigenous fermented milk beverage which usually prepared by mixing *dahi* and potable water in approximately equal proportions. *Lassi* is also made directly from *dahi* or using butter milk. *Lassi* is served on a very large scale in cold drink shops or houses restaurants during summer in almost every state. The product is especially more popular in central and northern parts of country and also in western countries

Muskmelon (*Cucumis melo*) is a beautiful juicy, tasty fruit of Cucurbitaceae family (Bailey and Bailey, 1976) [2]. It is an excellent source of vitamin A and vitamin C, minerals especially potassium, phosphorus and iron (Parveen *et.al.* 2012) [9]. It has been shown to possess useful medicinal properties such as analgesic, anti-inflammatory, antioxidant, antiplatelets and anti-cancer activity (Parle and singh 2011) [8]

There is a need for better utilization of muskmelon fruits by processing them into value added products, which helps to improve returns to the grower and processor, Muskmelon fruit has reasonably high sugar content and carotenoids with wide variation in soluble solids reported for different cultivars. These characteristics suggest that muskmelon fruit has the potential for being converted to processed products with desirable flavour properties.

Material and methodology
Treatment combinations
Following treatment combinations were considered for preparation of paneer with black pepper.
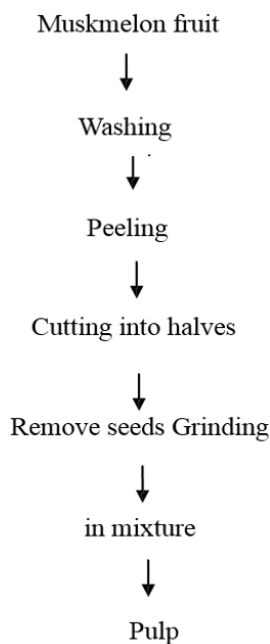T1 - 100 parts of skim milk curd
T2 - 95 parts of skim milk curd + 5 parts of muskmelon pulp
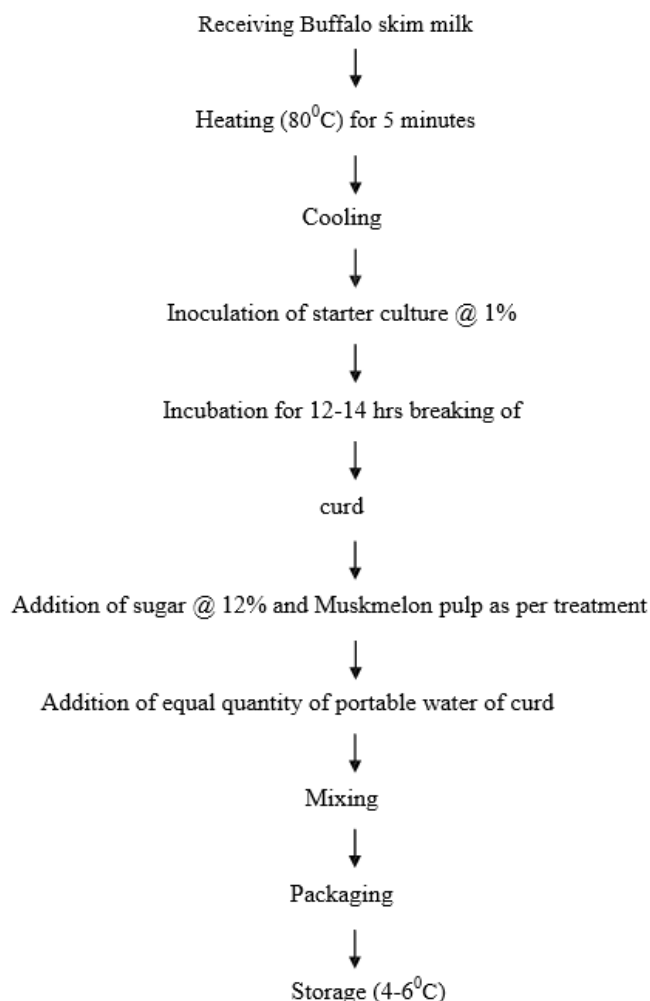T3 - 90 parts of skim milk curd + 10 parts of muskmelon pulp
T4 - 85 parts of skim milk curd + 15 parts of muskmelon pulp
T5 - 80 parts of skim milk curd + 20 parts of muskmelon pulp
(Note - In above all treatments, sugar will be added @ 12% of total volume basis).

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Experimental Methodology
Preparation of muskmelon pulp

Muskmelon fruit
↓
Washing
↓
Peeling
↓
Cutting into halves
↓
Remove seeds Grinding
↓
in mixture
↓
Pulp

Flow chart for preparation of muskmelon pulp

Lassi preparation

Lassi was prepared as per the procedure described by Mule *et al.* (2018) [6] with slight modifications.

Receiving Buffalo skim milk
↓
Heating (80^0C) for 5 minutes
↓
Cooling
↓
Inoculation of starter culture @ 1%
↓
Incubation for 12-14 hrs breaking of
↓
curd
↓
Addition of sugar @ 12% and Muskmelon pulp as per treatment
↓
Addition of equal quantity of portable water of curd
↓
Mixing
↓
Packaging
↓
Storage (4-6^0C)

Flow diagram for preparation of low fat muskmelon *lassi*

Results and Discussion
Sensory Evaluation of Low Fat Muskmelon *Lassi* Samples

Low fat *lassi* samples prepared from buffalo skim milk blending with muskmelon pulp with different levels were subjected for the sensory attributes such as flavour, body and texture, colour and appearance and overall acceptability by a semi trained panel of judges by using a 9 point Hedonic scale and the data so obtained were analyzed by using completely randomized design (CRD). The scores given by judges for different parameters were recorded and subsequently discussed into the following tables.

Flavour

From (Table 1) revealed that the mean flavour score of low fat muskmelon *lassi* of various treatments increased from "6.88 to 8.88". Flavour score for treatments T1, T2, T3, T4 and T5 as 8.38, 8.88, 8.06, 7.69 and 6.88, respectively. The uppermost score i.e. 8.88 was acquired for muskmelon *lassi* utilizing 5 per cent of muskmelon pulp and least score i.e. 6.88 as acquired for muskmelon *lassi* arranged by utilizing 20 per cent of muskmelon pulp. The treatment T2 was significantly superior over all the treatments except T1 (control).

Table 1: Sensory score for flavour

Replication Treatment	R I	R II	R III	R IV	Mean
T1	8.50	9.00	8.00	8.00	8.38ab
T2	9.00	9.00	8.50	9.00	8.88a
T3	8.00	8.25	8.00	8.00	8.06bc
T4	7.50	7.75	8.00	7.50	7.69c
T5	7.50	7.00	6.50	6.50	6.88d

SE ± 0.172   CD= 0.519

The results obtained in the present investigation for flavour were more or less similar with the results of Dhumal (2017) [4] who reported that *lassi* prepared from 2.5% pudina was superior in flavour than other treatments.

Body and texture

From (Table 2) resulted that the body and texture score of low fat muskmelon lassi of various treatments ranges from "6.63 to 8.75 for low fat muskmelon lassi. The uppermost score i.e. 8.75 was acquired for low muskmelon lassi prepared by utilizing 5 parts of muskmelon pulp and least score 6.88 as acquired for muskmelon lassi prepared by utilizing 20 parts of muskmelon pulp. The treatment T2 was significantly superior over all the treatments.

Table 2: Sensory score for body and texture

Replication Treatment	R I	R II	R III	R IV	Mean
T1	8.00	8.50	8.25	8.00	8.19b
T2	8.75	9.00	8.25	9.00	8.75a
T3	8.00	8.00	8.00	8.00	8.00b
T4	7.00	7.50	8.00	7.00	7.38c
T5	6.50	7.00	6.00	7.00	6.63d

SE ± 0.178   CD= 0.539

The result of present study are more or less similar with the findings of Dhumal (2017) [4]

Colour and appearance

It is revealed from (Table 3) that the colour and appearance for low fat muskmelon *lassi* ranges from 6.81 to 8.81. The

uppermost score i.e. 8.81 was found for low fat muskmelon *lassi* prepared by utilizing 5 parts of muskmelon pulp and least score 6.81 as observed for low fat muskmelon *lassi* prepared by utilizing 20 parts of muskmelon pulp.

Table 3: Sensory score Colour and appearance

Treatment \ Replication	R I	R II	R III	R IV	Mean
T1	8.00	8.00	9.00	8.00	8.25b
T2	9.00	8.75	8.50	9.00	8.81a
T3	8.00	8.25	8.00	8.50	8.19b
T4	7.50	7.00	8.00	7.50	7.50c
T5	6.50	7.00	6.75	7.00	6.81d

SE ± 0.171   CD= 0.517

The results are in agreement with Shaikh *et al.* (2016) [10] observed that the *lassi* blended with sapota pulp with treatment T4 had obtained highest score and significantly superior due to its flavor, body and texture, colour and appearance.

Overall acceptability
From (Table 4) it was observed that the overall acceptability for low fat muskmelon *lassi* ranges from 6.69 to 8.94. The uppermost score i.e. 8.94 was found for low fat muskmelon *lassi* prepared by utilizing 5 parts of muskmelon pulp and least score 6.69 as observed for low fat muskmelon *lassi* prepared by utilizing 20 parts of muskmelon pulp.

Table 4: Sensory score for overall acceptability

Treatment \ Replication	R I	R II	R III	R IV	Mean
T1	8.50	8.25	8.50	8.00	8.31ab
T2	9.00	8.75	9.00	9.00	8.94a
T3	8.50	8.00	8.00	8.00	8.13b
T4	7.50	7.00	6.50	8.00	7.25c
T5	6.00	6.50	7.00	7.25	6.69c

SE ± 0.207   CD= 0.624

The different scientist studied on sensory attributes of *lassi*, The result obtained from this study are more or less similar with the result obtained by Kadam *et al*. (2006) [5], Nair *et al.* (2007) [7], Bhutkar (2011) [3] and Shuwu *et al.* (2011) [11] in their respective work on different aspect.

From the results of the present investigation, it may be concluded that muskmelon pulp could be successfully utilized for preparation of low fat lassi. Addition of muskmelon pulp in lassi improved the sensory quality and acceptability of the product. Besides typical flavour, it also adds medicinal properties to the product. Such flavouring did not appreciably affect the composition of lassi. The most acceptable quality of low fat lassi can be prepared by using 5.0 parts of muskmelon pulp. Being a low fat, such type of lassi will be beneficial to the health conscious people.

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