

QUALITY EVALUATION OF BASUNDI FORTIFIED WITH ALOE VERA GEL AND DRIED BETEL LEAF

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Abstract: The aim of this study “quality evaluation of basundi fortified with aloe vera gel and dried betel leaf” was to encourage people for making of Basundi in different combination of aloe vera and Betel leaf, to make Basundi more healthy, nutritive and attractive. Treatments were T0 (0% AVG), T1 (2% AVG+1% BDL), T2 (4% AVG+1% BDL), T3 (6% AVG+1% BDL). It was found from results of the study that overall acceptability of T2 i.e. 4% AVG incorporated treatment was best organoleptically. It can be concluded that Basundi with incorporation of healthy flavours can be organoleptically acceptable with maintaining other important chemical and microbial parameters.

AVG=Aloevera gel , BDL= Beetal leaf extract

Introduction: Basundi is one of the traditional dairy products. It is found in western and southern part of India. It has high nutritive value so; to make it popular in other parts of India with different flavour. This study aims to encourage people for making of Basundi in different combination of aloe vera and Betel leaf, to make Basundi more healthy, nutritive and attractive. Recently phytochemicals present in plant especially Aloe vera have attracted a great deal of attraction which mainly concentrated on their role in preventing disease caused as a result of oxidation stress. The inclusion of aloe vera is expected to enhance the nutritive value of Basundi and collectively increases the medicinal and therapeutic value when added to Basundi. Betel leaf's medicinal uses are hugely underrated, but highly efficient. Betel leaf is an amazing analgesic that offers relief from pain. It can be used to alleviate pain caused due to cuts, bruises, rashes, inflammation (internal as well as external), indigestion, constipation, etc. Betel leaf contains the goodness of antioxidants. Antioxidants clear free radicals from the body. This restores the normal PH level of an upset stomach. As a result, constipation is eased. Betel leaf is good for digestion. Decreased appetite is also an outcome of an upset stomach.

So the investigation is planned with a view to standardize the technique of processing of Basundi fortified with Aloe vera gel & Betel leaf. As it improves the nutritional value of Basundi therefore the project “Quality Evaluation and Value Addition of Basundi Fortified with Aloe Vera Gel and Dried Betel Leaf” with following objectives:

- 1- To prepare Basundi by using cow and buffalo milk, Aloe vera gel and Betel leaf.
- 2- To assess the chemical and microbial qualities of prepared Basundi.
- 3- To assess the sensory quality of developed Basundi.
- 4- To find out the cost of developed Basundi.

Experimental trials

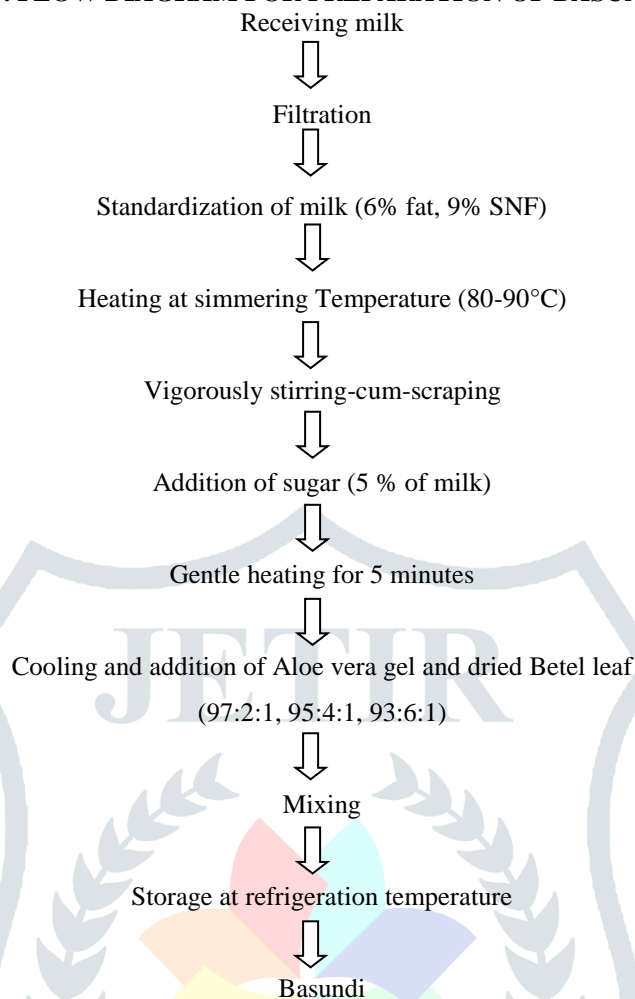
After judging of different levels by sensory evaluation with the 9-point hedonic scale, the following treatment combinations were selected for preparation of Aloe vera gel and dried Betel leaf basundi.

Treatment	Levels of AVG	Levels of DBL
T 0 (control)	0 %	0%
T 1	02 %	1.0%
T 2	04 %	1.0%
T 3	06 %	1.0%

3.4. Preparation of basundi

Fresh, clean milk was boiled in iron karahi, with constant stirring cum scraping action with wooden khunti. When concentration was about one half of original volume of milk, clean, good quality sugar was added @ 5 % of original volume of milk, gentle heating was continued for five minutes till final concentration of about 2:1. Basundi was then allowed to boil for 10 minutes. Then karahi was removed from fire and allowed to cool. Then AVG & DBL were added at respective concentrations according to levels. The product was then cooled and stored at refrigeration temperature till use.

3.5. FLOW DIAGRAM FOR PREPARATION OF BASUNDI



RESULTS AND DISCUSSION

The data collected on the different aspects were tabulated and analyzed statistically using the method of analysis of variance and critical difference technique. The significant and non-significant differences observed have been analyzed critically within and between the treatment combinations.

Average data for different parameters of control and experiments (in percent)

scores/ values based on mean value of different parameters of treatments					CD Values
1. Chemical analysis in percent					
Treatments Parameters	T ₀	T ₁	T ₂	T ₃	
Fat	14.73	14.34	14.05	13.75	0.02
Protein	8.31	8.35	8.18	8.01	0.02
Moisture	50.22	50.77	51.75	52.31	0.62
Carbohydrate	24.9	24.45	23.96	23.47	0.11
Ash	1.86	2.05	2.016	1.97	0.02
Total solids	49.98	49.2	48.23	47.25	0.32
Acidity	0.38	0.36	0.35	0.34	0.02
2. Microbiological scores cfu/gm					
Treatments Parameters	T ₀	T ₁	T ₂	T ₃	
Yeast&mould(cfu/gm)	3.4	4.2	4	3.8	1.23
Coliform	Nil	Nil	Nil	Nil	Nil
Standard plate count	15.2	14.2	12.8	12	2.20
3. Organoleptic scores					
Treatments Parameters	T ₀	T ₁	T ₂	T ₃	
Overall acceptability	7.7	8.1	8.2	7.6	0.44

From the above data on moisture percentage in samples of different treatments and control, the highest mean moisture percentage was recorded in the sample of T3 (52.31) followed by T2 (51.75), T1 (50.77), T0 (50.22). Increase in moisture content in experimental sample of Basundi with the increase in aloe vera content because increase of pasteurization time reduces the Water retention capacity (WRC) values of aloe vera gel.

From the above data on ash percentage in samples of different treatments and control, the highest mean ash percentage was recorded in the sample of T1 (2.05) followed by T2 (2.02), T3 (1.97), T0 (1.86). According to **David, 2015** range of mineral content of Basundi prepared from milk is 0.90-1.75. According to **Femenia et al., 1999; Eshun, H.E, 2004; Hernández et al., 2006; Boudreau and Beland, 2006; Bozzi et al., 2007; Miranda et al., 2009** mineral content of aloe vera gel is 0.16 ± 0.02 . So this is evident from the result that increase in aloe vera gel in the prepared treatment results in decrease in mean ash content significantly.

From the above data on carbohydrate percentage in samples of different treatments and control, the highest mean carbohydrate percentage was recorded in the sample of T0 (24.90) followed by T1 (24.45), T2 (23.96), T3 (23.47). According to **Chang et. al. 2005** heating process promote thermal degradation of polysaccharide of *Aloe vera* gel at higher temperature ranging from 80 °C to 90 °C which probably results in reduced carbohydrate content on increasing aloe vera content.

From the above data on fat percentage in samples of different treatments and control, the highest mean fat percentage was recorded in the sample of T0 (14.73) followed by T1 (14.34), T2 (14.05), T3 (13.95). It is evident from the result that increase in aloe vera gel content result in reduction in fat content of prepared treatment as fat content of milk Basundi (6.00-19.00 According to **David, 2015**) is higher than aloe vera gel (0.01 ± 0.02 According to **Femenia et al., 1999**)

From the above data on protein percentage in samples of different treatments and control, the highest mean protein percentage was recorded in the sample of T1 (8.35) followed by T0 (8.31), T2 (8.18), T3 (8.01). It is evident from the result that increase in aloe vera gel content result in reduction in protein content of prepared treatment as protein content of milk Basundi (4.06-9.47 According to **David, 2015**) is higher than aloe vera gel (0.12 ± 0.01 According to **Femenia et al., 1999**)

From the above data on acidity percentage in samples of different treatments and control, the highest mean acidity percentage was recorded in the sample of T0 (0.38) followed by T1 (0.36), T2 (0.35), T3 (0.34). It is evident from the result that increase in aloe vera gel content result in reduction in fat content of prepared treatment as fat content of milk Basundi (0.24-0.52 as % lactic acid According to **David, 2015**) is higher than aloe vera gel (0.06 ± 0.02 as % mallic acid According to **Femenia et al., 1999**)

From the above data on total solids percentage in samples of different treatments and control, the highest mean total solids percentage was recorded in the sample of T0 (49.98) followed by T1 (49.20), T2 (48.23), T3 (47.25). It is evident from the result that increase in aloe vera gel content result in reduction in total solids content of prepared treatment as total solids content of milk Basundi (37.37-56.98 According to **David, 2015**) is higher than aloe vera gel.

From the above data on yeast and mold count in samples of different treatments and control, the highest mean yeast and mold count percentage was recorded in the sample of T1 (4.20) followed by T2 (4.00), T3 (3.80), T0 (3.40). According to FSSAI standard the limit of yeast & mold count is 10cfu/gm. It is evident from the result that microbiologically prepared treatments fall within the standard limit.

It is evident from the table, that the coliform test for control and experimental sample was 100% negative. It shows the absence of gram negative bacteria which means the strict hygienic practice was maintained during the procedure preparation.

From the above data on SPC count percentage in samples of different treatments and control, the highest mean SPC count was recorded in the sample of T0 (15.20) followed by T1 (14.20), T2 (12.80), T3 (12.00). According to FSSAI standard the limit of SPC count is 75×10^3 cfu /g. It is evident from the result that microbiologically prepared treatments fall within the standard limit.

From the above data on overall acceptability of samples of different treatments and control, the highest mean overall acceptability was recorded in the sample of T2 (8.20) followed by T1 (8.10), T0 (7.70), T3 (7.60). It is evident from the result that T2 i.e. 4% AVG incorporated treatment was best organoleptically.

Conclusion: Basundi is one of the traditional dairy products. It is found in western and southern part of India. It has high nutritive value so; to make it popular in other parts of India with different flavour was the aim of the study. It is evident from results of the study that overall acceptability of T2 i.e. 4% AVG incorporated treatment was best organoleptically. It can be concluded that Basundi with incorporation of healthy flavours can be organoleptically acceptable with maintaining other important chemical and microbial parameters.

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