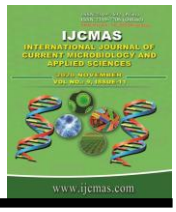
Int.J.Curr.Microbiol.App.Sci (2020) *9*(11): 869-873

International Journal of Current Microbiology and Applied Sciences
ISSN: 2319-7706 **Volume 9 Number 11 (2020)**
Journal homepage: http://www.ijcmas.com



Original Research Article https://doi.org/10.20546/ijcmas.2020.911.104

Studies on Sensory Properties of *Dahi* Blended with Biofortified Bajra Flour

R. V. More[1*], B. M. Thombre[2], S. G. Narwade[3] and V. Y. Sawant[2]

[1]Department of Animal Husbandry and Dairy Science,
[2]College of Agriculture, VNMKV, Parbhani, India
[3]COA, Ambajogai, India

**Corresponding author*

Keywords

Dahi, Flour, Sensory, Buffalo milk

Article Info

Accepted:
10 October 2020
Available Online:
10 November 2020

A B S T R A C T

In the present study *dahi* was prepared by using buffalo milk. While preparing *dahi* milk solids were replaced with biofortified bajra flour. *Dahi* was prepared from buffalo milk by blending of bajra flour at 2,4,6 and 8 parts .The product obtained was subjected for organoleptic evaluation by panel of semi trained judges. It was observed that the colour and appearance score of *dahi* for treatment T_1, T_2, T_3, T_4 and T_5 was 9.00, 8.38, 7.88, 7.13 and 6.63, respectively. Flavour score was 9.00, 8.75, 7.88, 7.00 and 6.00, respectively. Body and texture was 6.25, 6.75, 7.25 and 7.88, respectively. The overall acceptability scores for *dahi* 9.00, 8.75, 7.88, 7.00 and 6.00, respectively for T_1, T_2, T_3, T_4 and T_5. It was clear that as the level of flour increased in the blend the overall acceptability decreased.

Introduction

Cereals and millets are superior in nutritional quality compared to other fermentable substrates, because these plentiful resources contain some of the necessary minerals, vitamins, sterols, growth factors and dietary fibre, thereby fulfilling the essential nutrient needs of mankind (Chavan and Kadam, 1989). Millets are rich in antioxidants much higher than other major cereal crops so they are used as nutraceuticals (Balasubramanian, 2013). Millets are major food component in various traditional foods and drinks such as bread and porridges, and is also a major source of proteins and carbohydrate, as well as other essential phytonutrients (Habiyaremye *et al.*, 2017).

Fermented foods are of great significance since they provide and preserve vast quantities of nutritious foods in a wide diversity of flavor, aroma, and texture which enrich the human diet. The microorganisms involved in *Dahi* fermentation include *Streptococcus thermophilus, S. lactis, S. cremoris, Lactobacillus bulgaricus, L. acidophiuls, L. plantarum* and lactose fermenting yeasts. When culture is undefined and kept in unhygienic condition it contains

mixture of various desirable and undesirable strains of bacteria.

The fermented milk-cereal based products are extremely popular in Indian subcontinent and most of the African countries. Cereal-based dairy products are popular or famous across the country and occupy a valued place in the Indian diet, not only for their taste and eating pleasure also due to their high nutritional quality. Some of the fermented foods prepared by incorporating milk-solids are *Kindimu* (Central African region), *Ben-Saalga* and *Ogi* (Nigeria), *Rabadi, Dahi-vada,* Curd rice (India), *Trahanas* (Greece), *Kishk* (Egypt) (Singh, 2007). Pearl millet is rich in resistant starch, insoluble and soluble dietetic fibers, antioxidants and minerals. It contains about 13.6 per cent crude protein, 63.2 per cent starch, 2.1 per cent ash, 2.8 per cent crude fiber, 7.8 per cent crude fat and 92.5 per cent dry matter (Ali and Abdalla, 2003). Pearl millet grains contain 0.38mg of thiamine, 0.21 mg riboflavin, and 2.8 mg of niacin (Hulse *et al.,* 1980). Bajra grains contain minerals like iron, phosphorus, magnesium, and calcium in containing appreciable amounts (Burton *et al.,* 1992).

Iron in animal and human nutrition is an important trace element. Iron is active in the cytochrome structures and with other enzymes. It is also a heme component in haemoglobin and myoglobin, in which it plays a significant role in the transport, storage and usage of oxygen (McLean *et al.,* 2007). Micronutrient malnutrition, particularly vitamin A, iron and zinc-related malnutrition, has recently reported to be a most prevalent food-related health problem globally Mason and Garcia 1993). The fortification of milk and dairy products with iron and zinc is considered a possible solution to avoid iron and zinc deficiency disease. Hybrid variety AHB 1200 variety of bajra contains 88 ppm iron while others contain average 40 ppm of iron it also contains 43 ppm zinc. As milk is deficient in Iron, it was decided to add flour of AHB 1200 biofortified bajra during *dahi* preparation. Use of bajra flour in preparation of cereal based traditional dairy products like *dahi* would not only improve the product quality but also provide essential mineral like iron, which will be used to feed children, adolescence girls, and pregnant women suffering from anemia. So present study is proposed with the process for the preparation of buffalo milk.

Materials and Methods

Preparation of *dahi*

During this study flour of iron rich variety of bajra (AHB 1200) and buffalo milk from buffalo unit Dept of AHDS will be utilized for preparation of *dahi* independently. Milk was Standardize to 6 per cent fat by using Pearson's square formula. The treatment details will be as below

Treatment combinations

T_1 - 100 Parts of milk
T_2- 98.00 Parts of milk + 2 Parts of Bajra flour
T_3 - 96.00 Parts of milk + 4 Parts of Bajra flour
T_4 - 94.00 Parts of milk + 6 Parts of Bajra flour
T_5 - 92.00 Parts of milk + 8 Parts of Bajra flour

Preparation of *Dahi*

First the composite buffalo milk was filtered and standardized to 6 per cent fat. It was pasteurized at 80 ^{0}C for 10 minutes. Bajra flour was added slowly during heating at 70^0 C. Milk was cooled down to room temperature. Active *dahi* starter culture (ncdc-167) was inoculated under aseptic conditions

at the rate of 1.5 per cent and mixed thoroughly. The inoculated milk was incubated at 37 ^{0}C temperature for 12 hrs and *dahi* was obtained.

Results and Discussion

Sensory evaluation of *Dahi*

The experimental *Dahi* samples were served to a panel of semi trained judges for sensory evaluation such as, colour and appearance, flavour, body and texture and overall acceptability using "9 point hedonic scale". The numerical score given by judges for individual attribute was computed to obtain mean and these means were subjected to statistical analysis. The data was analyzed statistically by using Completely Randomized Design (CRD) as per Panse and Sukhatme (1985).Results obtained are shown in table 1.

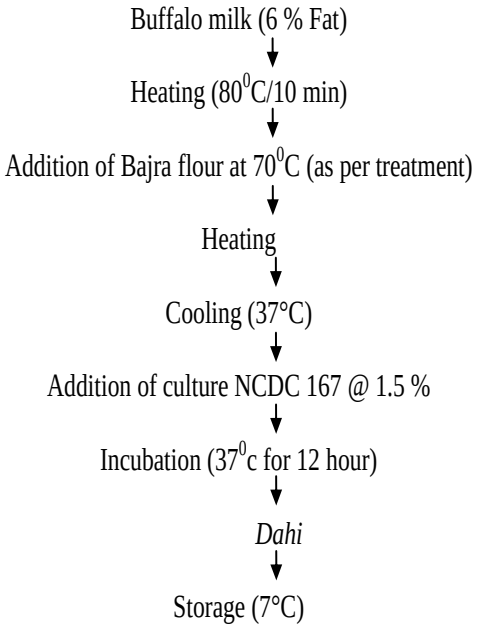
It is noticed from table 1 that the body and texture score for *dahi* ranged from 8.0 to 9.0. Body and texture score for treatment T_1, T_2, T_3, T_4 and T_5 was 9.00, 8.75, 8.37, 8.13 and 8.00, respectively. The highest score was recorded for treatment T_1 (9.00) prepared entirely from buffalo milk and lowest score (8.0) was obtained for *dahi* prepared from buffalo milk added with 8 parts (T_5) of bajra flour. It is also noticed from above table that body and texture decreased with increase in concentration of bajra flour which might be due to increase in viscosity because of higher fibre content in bajra flour. Swarnima *et al.*, (2017) and Dhumal (2017).

It is observed from table 1 that the colour and appearance score for *dahi* ranged from 9.00 to 6.63. Colour and appearance score for treatment T_1, T_2, T_3, T_4 and T_5 was 9.00, 8.38, 7.88, 7.13 and 6.63, respectively. The highest score was recorded for treatment T_1 (9.00) prepared entirely from buffalo milk and lowest score (6.63) was obtained for *dahi* prepared from buffalo milk added with 8 parts (T_5) of bajra flour. The score of *dahi* decreased with increase in concentration of bajra flour. All treatments were significantly different from each other and this might be due to dull colour of bajra flour added to milk. Results were comparable with the findings of Padghan *et al.*, (2018) and Syama (2014).

Table.1 Effect of addition of different levels of bajra flour on Overall acceptability score for *dahi*

Treatment	Body and Texture	Colour and Appearance	Flavour	Overall Acceptability
T_1	9.00^{a}	9.00^{a}	9.00^{a}	9.00^{a}
T_2	8.75^{b}	8.38^{b}	8.75^{a}	8.71^{a}
T_3	8.50^{c}	7.88^{c}	7.88^{b}	7.79^{ab}
T_4	8.13^{d}	7.13^{d}	7.00^{c}	7.21^{bc}
T_5	8.00^{e}	6.63^{e}	6.00^{d}	6.54^{c}
SE +	**0.085**	**0.11**	**0.085**	**0.032**
C.D. at 5%	**0.025**	**0.33**	**0.025**	**1.02**

Flow chart for preparation of *dahi lassi*



It is noticed that the flavor score for *dahi* ranged from 9.0 to 6.0. Flavour score for treatment T_1, T_2, T_3, T_4 and T_5 was 9.00, 8.75, 7.88, 7.00 and 6.00, respectively. The highest score was recorded for treatment T_1 (9.00) prepared entirely from buffalo milk while lowest score was recorded for treatment T_5 (6.00) prepared by replacing 8 parts of buffalo milk with bajra flour. The flavor score of *dahi* declined with increase in concentration of bajra flour. T1 and T2 were at par while other treatments were significantly different from each other and this might be due to floury flavor of bajra flour which is added to milk. Results were comparable with the findings of Sultana *et al.*, (2006)

Overall acceptability of the *dahi* for the treatments T_1, T_2, T_3, T_4 and T_5 were 9.0, 8.71, 7.79, 7.21 and, 6.54 respectively. The uppermost overall acceptability score (9.00) was obtained for treatment T_1 prepared entirely from buffalo milk while lowermost score was obtained for treatment T_5 (6.54) prepared by replacing 8 parts of buffalo milk with bajra flour. Treatment T_1 and T_2 were at par while there was no significant difference in treatment T_4 and T_5. Results were in agreement with the findings of Sultana *et al.*, (2006) noticed that overall acceptability of *dahi* decreased with increased in concentration of soya solids. Syama (2014) observed overall acceptability score of *dahi* decreased from 20.66 to 19.51 with increase in flour incorporation from 1 per cent to 3 per cent.

From present investigation it can be concluded that the bajra flour can be very well utilized for preparation of palatable, nutritional fermented dairy products. Although Overall acceptability of *dahi* decreased from 9.00 to 6.54 but as far as nutritional quality is concern developed *dahi* is highly nutritious in case of mineral like iron and zinc.

References

Ali Mam and Abdalla, A. H. (2003). Effect of Fermentation on the In Vitro Protein Digestibility of Pearl Millet. *Food*

Chem. Vol. 80(1), 51–54.

Balasubramanian, S. (2013). Processing of Millets. Paper Presented National Seminar on Recent Advances In Processing, Utilization and Nutritional Impact of Small Millets. *Madurai Symposium, Thamukkam Grounds, Madurai*, 13 Sept, 2013.

Burton, G. W., Wallace, A. T. and Rachie, K. O. 1992. Chemical Composition and Nutritive Value of Pearl Millet (*Pennisetum Typhoides*) Grain. *Crop Science*. Vol.12: 187-188.

Chavan, J. K. and Kadam, S. S. (1989). Nutrit ional Improvement of Cereals by Fermentation. *In: Critical Rev. in Food Sci. Nutr*. Vol. 28(5), 349-400

Dhumal, V. S. (2017). Development of Preparation of Pudina (*Mentha Arvensis*) *Lassi*. *Master's* (Agri.) *Thesis* Submitted to VNMKV, Parbhani (M.S.).

Habiyaremye, C., Matanguihan, J. B., Alpoim Guedes, J., Ganjyal, G. M., Whiteman, M. R., Kidwell, K. K. and Murphy, K. M. (2017). Proso Millet (*Panicum Miliaceum* L.) and its Potential for Cultivation in the Pacific Northwest, U.S: A Review. *Frontiers in Plant Science*, *7*, 1961.

Hulse, J. H., Laing, E. M. and Pearson, O. E. (1980). Sorghum and the Millets: Their Composition and Nutritive Value, *Academic Press, New York*. 187-193.

Mason, J. B. and Garcia, M. (1993). Micronutrient Deficiency—the Global Situation. *SCN News*. 9:11–6.

McLean, E., Egli, I., Benoist, B., Wojdyla, D. and Cogswell, M. (2007). Worldwide prevalence of anemia in pre-school aged children, pregnant women and non-pregnant women of reproductive age. In Nutritional Anemia; Kraemer, K., Zimmermann, M.B., Eds.; Sight and Life: Basel, Switzerland. pp. 1–12.

Padghan, P. V., Deshmukh N. B., Patil S. P., Mane R. R. and Katore V. D. (2018). Blending of Buffalo milk and Sweet corn milk. *Adv. Res. Agri. Vet Sci.* 5(3), 21-26.

Panse, Y. P. and Sukatme, P. V. (1967). Statistical Methods for Agricultural Workers, 2nd edn. Indian Council of Agricultural Research, New Delhi.

Swarnima Dey, John David, Bhole Shankar Rai and Kaushal Kishor. (2017). Studies on Sensory Attributes of Cereal Based Fermented Functional Milk. *Journal of Pharmacognosy and Phytochemistry*. 6(4), 2008-2010.

Sultana, M. N., Wadud, A., Islam, M. N., and Uddin, M. J. (2006). Study on the quality of dahi prepared from Buffalo milk with the addition of different levels of soya milk. *J. Bangladesh Agril. Univ*. 4(1), 111-116.

Syama, A. M. (2014). Quality Attributes of Probiotic *Dahi* Incorporated with Foxtail Millet Flour. *(Master's thesis)* KVAFSU, Bidar, Karnataka.

How to cite this article:

More, R. V., B. M. Thombre, S. G. Narwade and Sawant, V. Y. 2020. Studies on Sensory Properties of *Dahi* Blended with Biofortified Bajra Flour. *Int.J.Curr.Microbiol.App.Sci.* 9(11): 869-873. doi: https://doi.org/10.20546/ijcmas.2020.911.104