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Effect of different levels of safflower milk and inulin on microbial analysis of Srikhand

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Abstract
Fermented foods have a wide range of dietary and medicinal benefits. Lactic acid bacteria play a key role in assessing the health benefits of fermented milks and other products. Bifidobacteria spp. and Lactobacillus acidophilus a probiotic dairy food that is commonly used. In the present study, buffalo milk was standardized to 6% fat and 9% solid not fat for manufacturing of Chakka. During the preparation of Shrikhand; using different levels of Inulin *viz*., @ 2%, @ 4%, @ 6% and @ 8% and levels of Safflower (*Carthamus tinctorius* L.) milk *viz*., @ 5%, @ 10%, @ 15% and @ 20% was added. Sugar was added @ 35%. The SPC count was declined from 6.2 x 10^3 to 18.3 x 10^3 cfu/g for Shrikhand stored at – 10 and 5 ^{0}C temperature, on 7th day. During preparation, the yeast and mould counts decreased. Shrikhand, both new and preserved, had no coliform bacteria. Shrikhand could be held at – 10 °C for up to 56 days.

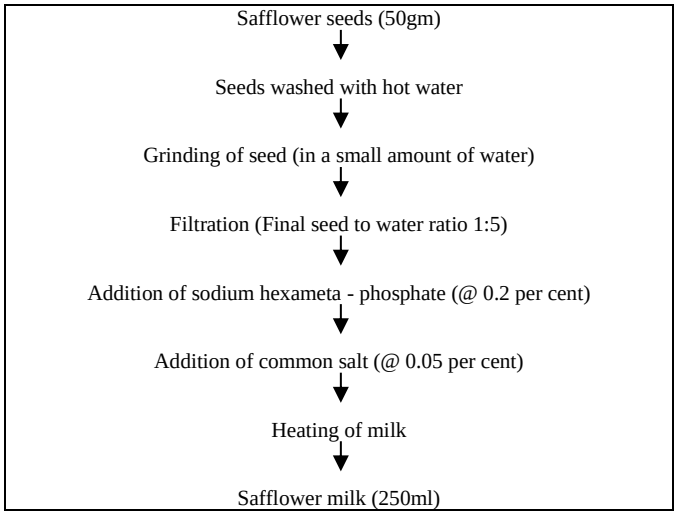
Keywords: safflower milk, inulin, microbial analysis

Introduction
Preservation of milk the usage of fermentation with LA bacteria is one of the elderly and efficient process to retain milk with its treasured vitamins as it is a probiotic product (Kongo and Malcata, 2016) [8]. Shrikhand is milk product obtained from lactic fermented curd which is semi- soft and sweetish-sour taste (Singh et al., 2014).
Indigenous (local) dairy fermented products have performed a vital function in the socio-economic lifestyles of Indians since times immemorial accounting for over 90% of dairy products (Singh, 2007). Milk products are organized to extend the shelf lifestyles and keep its nutritive cost as milk is the most perishable product (Harper and Richard, 2008). Fermented milk products have therapeutic, anti-cholesterolemia and anti-carcinogenic residences on the grounds that antiquity (Boghra and Mathur, 2000) [1].
Swapna et al., (2011) takes a gander at the unmistakable exceptional from Shrikhand by using the adjustion of probiotic lactic destructive organisms and as a way of life, used as an alternative curd as a starter tradition. The probiotics are usually used are Lactobacillus rhamnosus, Lactobacillus acidophilus and Lactobacillus sporogens and mixed as Lactobacillus acidophilus Lactobacillus + sporogens. The unusual lactic unfavourable tiny dwelling beings isolates executed from bull like milk, dairy milk and buffalo milk autonomously as a starter way of life or in whole with the aid of probiotics. The instances of Shrikhand have been investigated for organoleptic normal for the factor. are performed through using probiotics as a starter tradition within the Shrikhand had been prepared, the most excellent with recreation plan of probiotics that Lactobacillus acidophilus + Lactobacillus sporogens score used recorded and the base in Lactobacillus rhamnosus in concealing recorded rating used, appearance, scent, surface, taste and normal affirmation of the component. Comparable results had been subtle with the integration of lactic damaging microorganism's isolates together with probiotics.

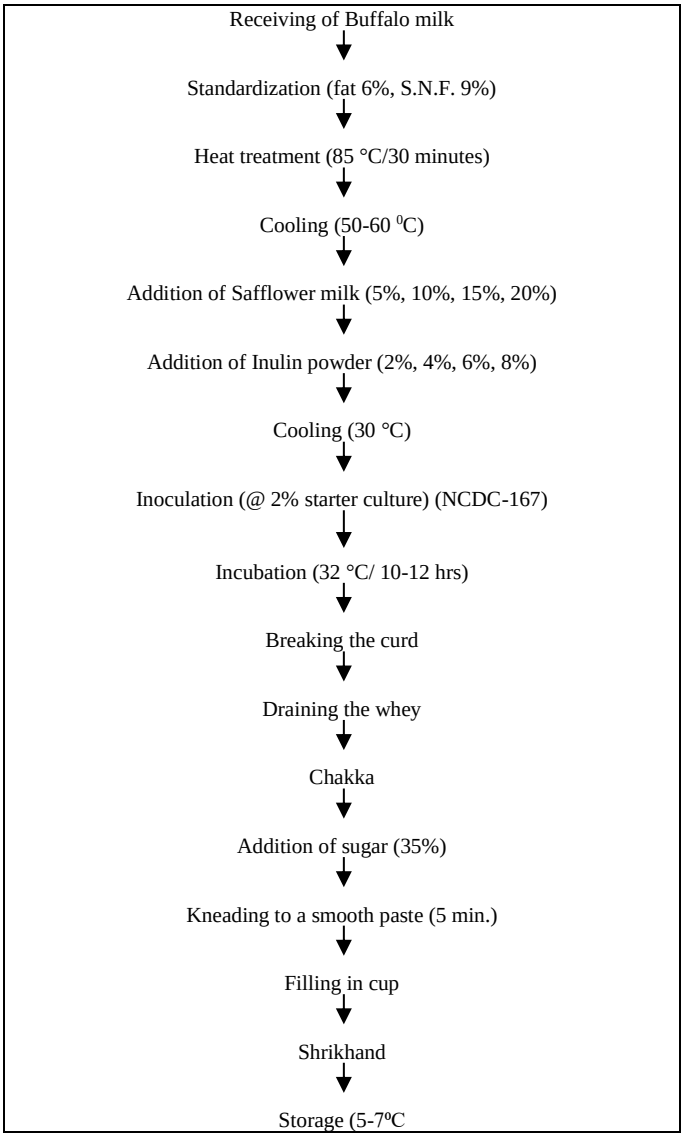
Materials and Methods
The Experimental work was carried out in the research laboratories of Warner College of Dairy Technology, Sam Higginbottom University of Agriculture, Technology and Sciences, Prayagraj (U.P.).

Procurement and collection of ingredients

a) **Buffalo milk:** Buffalo milk was collected from the local market at Prayagraj.
b) **Safflower seed:** It was collected from A.D.A. Market Alopi Bag, Prayagraj -211001, Uttar Pradesh
c) **Sugar:** Sugar was collected from local general stores of Prayagraj.
d) **Starter culture:** Starter culture was collected from NCDC, NDRI, Karnal.
e) **Inulin:** It was procured from Azelis (India) Private Limited, Navi Mumbai**.**
f) **Sodium Hexametaphosphate:** Procured from M/S Scientific and Allied Industries, E-39 New Agra – 282005.



Flow Diagram for Preparation of Safflower Milk



Flow Diagram for Manufacturing of Shrikhand

Table 1: Treatments combinations of developed Shrikhand supplemented with the addition of inulin and safflower (*Carthamus tinctorius* L.) milk levels. Y0- 100% Buffalo milk (T_0) Shrikhand without Safflower milk (S_0) and Inulin (I_0).

Y0	100% Buffalo milk (T_0) Shrikhand without Safflower milk (S_0) and Inulin (I_0).
Y1	Shrikhand prepared with 95% Buffalo milk (T_1) 5% Safflower milk (S_1) 2% and Inulin (I_1).
Y2	Shrikhand prepared with 90% Buffalo milk (T_2) 10% Safflower milk (S_2) 2% and Inulin (I_1).
Y3	Shrikhand prepared with 85% Buffalo milk (T_3) 15% Safflower milk (S_3) 2% and Inulin (I_1).
Y4	Shrikhand prepared with 80% Buffalo milk (T_4) 20% Safflower milk (S_4) 2% and Inulin (I_1).
Y5	Shrikhand prepared with 95% Buffalo milk (T_1) 5% Safflower milk (S_1) 4% and Inulin (I_2).
Y6	Shrikhand prepared with 90% Buffalo milk (T_2) 10% Safflower milk (S_2) 4% and Inulin (I_2).
Y7	Shrikhand prepared with 85% Buffalo milk (T_3) 15% Safflower milk (S_3) 4% and Inulin (I_2).
Y8	Shrikhand prepared with 80% Buffalo milk (T_4) 20% Safflower milk (S_4) 4% and Inulin (I_2).
Y9	Shrikhand prepared with 95% Buffalo milk (T_1) 5% Safflower milk (S_1) 6% and Inulin (I_3).
Y10	Shrikhand prepared with 90% Buffalo milk (T_2) 10% Safflower milk (S_2) 6% and Inulin (I_3).
Y11	Shrikhand prepared with 85% Buffalo milk (T_3) 15% Safflower milk (S_3) 6% and Inulin (I_3).
Y12	Shrikhand prepared with 80% Buffalo milk (T_4) 20% Safflower milk (S_4) 6% and Inulin (I_3).
Y13	Shrikhand prepared with 95% Buffalo milk (T_1) 5% Safflower milk (S_1) 8% and Inulin (I_4).
Y14	Shrikhand prepared with 90% Buffalo milk (T_2) 10% Safflower milk (S_2) 8% and Inulin (I_4).
Y15	Shrikhand prepared with 85% Buffalo milk (T_3) 15% Safflower milk (S_3) 8% and Inulin (I_4).
Y16	Shrikhand prepared with 80% Buffalo milk (T_4) 20% Safflower milk (S_4) 8% and Inulin (I_4).

Result and Discussion

The following subheads have been used to organize the findings of this report as well as related discussions:

Parameter	Fat (%)	Protein (%)	Lactose (%)	Ash (%)	TS (%)
Buffalo milk	6.00	3.78	5.10	0.78	15.66
Safflower milk	4.50	2.34	2.27	0.67	9.78

Total microbial load (SPC): Effect of storage on SPC (10^7x Cfu/ml) of developed Shrikhand during storage at 5-7 ºC. The SPC count on first day was 17.50 x 10^7 Cfu/ml (Table 1).
The SPC count declined from 17.50 x 10^7 Cfu/ml to 12.25 x 10^7 Cfu/ml for Shrikhand stored at 5-7 ºC respectively on 7th day. The SPC count of Shrikhand stored at 30 ^{0}C was decreased for 17.50 x 10^7 Cfu/ml to 12.25 x 10^7 Cfu/ml in 24 hrs. It was observed the product was acceptable up to 42 days when stored at 5-7 ºC. The observation indicated that as the storage temperature increased the SPC count also decreased.

Table 1: Showing SPC (10^7xCfu/ml) of developed Shrikhand during storage at 5-7 ºC.

Days	Mean
0th Day	17.50
Seven Day	16.25
Fourteen Day	16.15
Twenty One Day	15.50
Twenty Eight Day	14.25
Thirty Five Day	13.00
Fourty Two Day	12.25

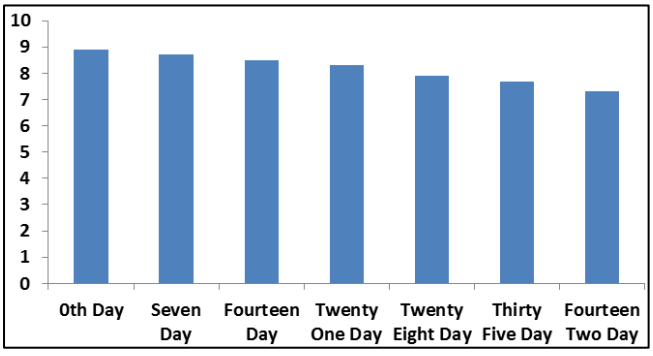


Fig 1: Showing the graph for SPC (10^7xCfu/ml) count of developed Shrikhand during storage at 5-7 ºC.

Yeast and mould count: Yeast and mould may enter milk products during the manufacturing process or afterward by improper handling. The yeast and mould of fresh Shrikhand was 4.25 x 10^4 cfu/ml (Table 2). The yeast and mould count decreased up to 7 days during storage at 5-7 ºC temperature but it increased after 7 days. Whereas the yeast and mould count of Shrikhand stored at 5-7 ºC was 4.25 x 10^4 cfu/ml on first day and it increased to 5.50 x 10^4 cfu/ml on 7th day making the product acceptable.

Table 2: Showing yeast and mould count (x10^4Cfu/ml) of developed Shrikhand during storage at 5-7 ºC.

Days	Mean
0th Day	4.25
Seven Day	5.50
Fourteen Day	8.50
Twenty One Day	9.25
Twenty Eight Day	9.50
Thirty Five Day	10.50
Fourteen Two Day	11.25

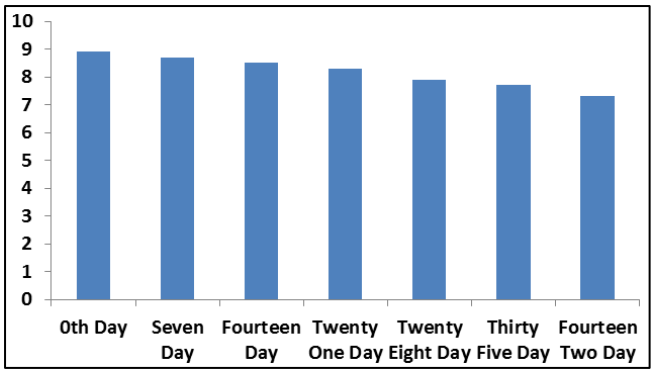


Fig 2: Showing the graph for yeast and mould count (x10^4Cfu/ml) of developed Shrikhand during storage at 5-7 ºC.

Coliform count: Since the low pH and acidity of fermented milk inhibits the development of these microorganisms, fermented milk products are not ideal for their growth. Coliforms were found to be missing in both fresh and frozen Shrikhand samples deposited at 5-7 ºC.

References

1. Boghra VR, Mathur ON. Physico-chemical status of major milk constituents and minerals at various stages of

shrikhand preparation. Journal of Food Science Technology, Mysore 2000;37:111-5.
2. Bruno FA, Shah NP. Effect of feeding Bifidobacterium longum and Inulin on some gastrointestinal indices in human volunteers. Bioscience Microflora 2004;23(1):10-20.
3. Cooper PD, Rajapaksha KH, Barclay TG, Ginic-Markovic M, Gerson AR, Petrovsky N. Inulin crystal initiation via a glucose-fructose cross-link of adjacent polymer chains: atomic force microscopy and static molecularmodelling. Carbohydrate Polymer 2015;117:964-972.
4. David OM, Aderibigbe EY. Microbiology and proximate composition of 'ogiri', an oily paste produced from different melon seeds. New York Science Journal 2010;3(4):18-27.
5. Eckburg PB, Bik EM, Bernstein CN, Purdom E, Dethlefsen L, Sargent M, *et al*. Diversity of the human intestinal microbial flora. Science 2005;308(5728):1635-1638.
6. Gibson GR, Roberfroid MB. Dietary modulation of the human colonic Harper N, Richard HL. Survival and growth of food borne microorganisms in processed and individually wrapped cheese slices. Journal of Environmental Health. hyper sensitivity in murine influenza vaccination model 1995.
7. Kumbhar SB, Ghosh JS, Samudre SP. Microbiological Analysis of Pathogenic Organisms in Indigenous Fermented Milk Products. Advance Journal of Food Science and Technology 2009;1(1):35-38.
8. Kongo JM, Malcata FX. Acidophilus Milk. Encyclopedia of Food and Health 2016, 6-14.
9. Meyer D, Stasse-Wolthuis M. The bifidogenic effect of inulin and oligofructose and its consequences for gut health. European Journal of Clinical Nutrition 2009;63:1277-89.microbiota: Introducing the concept of prebiotics. Journal of Nutrition, 125, 1401–1412.
10. Navita Nigam, Rashmi Singh, Upadhayay PK. Incorporation of chakka by papaya pulp in the manufacture of shrikhand. J Dairying, Foods and H S 2009;28:115-8.
11. Singh V. Annual Report of Ad Hoc Project on "To Study the Usefulness of Petal from Indian Cultivars of Safflower for Developing Value Added Products of Edible Nature." Paper presented at Group Monitoring Workshop on DST, New Delhi, February 3–5 2005, 7-11.
12. O'Sullivan DJ. Screening of intestinal microflora for effective probiotic bacteria. Journal of Agricultural and Food Chemistry 49:1755-60. Of ethanol extract of safflower seed on bone loss in ovariectomized rat. Food Science and Biotechnology, 16(3), 392e397. of phenolic compounds isolated from seeds of safflower (*Carthamus tinctorius* L.) on cancer cell lines. Food Science and Biotechnology 2001;11:140e146.
13. Shen RL, Dang XY, Dong JL, Hu XZ. Effects of oat β-glucan and barley β-glucan on fecal characteristics, intestinal microflora, and intestinal bacterial metabolites in rats. Journal of Agriculture and Food Chemistry 2012;60:11301-11308.
14. Zoetendal EG, Vaughan EE, De Vos WM. A microbial world within us. Molecular Microbiology 2006;59(6):1639-1650.