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PN Khadse

PG Student, Animal Husbandry
and Dairy Science, College of
Agriculture, Nagpur,
Maharashtra, India

AS Ingole

Professor, Animal Husbandry
and Dairy Science, College of
Agriculture, Nagpur,
Maharashtra, India

RM Zinjarde

Associate Professor (CAS),
Animal Husbandry and Dairy
Science, College of Agriculture,
Nagpur, Maharashtra, India

AM Prajapati

PG Student, Animal Husbandry
and Dairy Science, College of
Agriculture, Nagpur,
Maharashtra, India

Studies on physico-chemical quality of curd prepared by using different utensils

PN Khadse, AS Ingole, RM Zinjarde and AM Prajapati

Abstract

The present investigation entitled “Studies on quality of curd prepared by using different utensils” was carried out in Animal Husbandry and Dairy Science Section, College of Agriculture, Nagpur during the year 2019-2020. The purpose of present investigation was to find out which utensils gives better results for preparation of curd on the basis of physico-chemical properties, sensory and organoleptic evaluation of curd. The curd was prepared by using earthen (T₁), stainless steel (T₂), aluminum (T₃), plastic (T₄) and china clay (T₅) utensils with five treatments and four replications. The data were statistically analyzed by completely randomized design (CRD). The curd prepared by using earthen container (T₁) contained 3.51, 3.48, 12.32, 87.68, 0.73, 0.68, per cent fat, protein, total solids, moisture, ash, acidity, 4.49 pH respectively and 24.90 g curd tension. Hence, it is concluded that good quality of curd is made in earthen container (T₁).

Keywords: Milk, curd, physico-chemical attributes, container

Introduction

Milk is considered as a nature's almost perfect food. It is rich source of almost all essential nutrients in proper proportion which require for growth and development of human being. Starter culture used for bio preservation of the product resulting in prolonged shelf life and enhance safety, improvement of rheological and sensory properties multifunctional positive effect to human health and bacteriocins production as containerial food preservatives (Tamime, 2006 and Bhullar *et al.* 2002) [2, 15].

Curd is a good source of vit B, proteins, and calcium which are much easier for the body to digest than when they are present in fresh milk. The fat, protein, lactose, ash, total solid, pH, titratable acidity, syneresis were in the range of 2.45-3.60 per cent, 2.66-3.6 per cent, 4.12-4.73 per cent, 0.48- 0.74 per cent, 12.38-18.55 per cent, 4.11-5.05, 0.58-1.07 per cent lactic acid and 28.09-38.57 per cent respectively. (Mona Deb and Seth, 2014) [12].

Research work on studies on quality of curd prepared by using different utensils was undertaken with a view to find out response of different container *viz.* earthen container, stainless steel, aluminium, plastic and china clay container on quality of curd preparation.

Material and Methods

The preparation of curd by using different utensils was undertaken in the section of Animal Husbandry and Dairy science, College of Agriculture Nagpur, during 2019-20. Curd prepared from cow milk was standardized at 3.5% fat. Added freeze dried pure culture of *Lactococcus lactis* (*Streptococcus lactis*) and *Lactobacillus bulgaricus* obtained from National Dairy Research Institute, Karnal (Haryana) to this milk to different container like earthen (T₁), steel (T₂), aluminium (T₃), plastic (T₄) and china clay (T₅) with four replication and incubate the curd overnight. The fat, total solids, acidity, protein, ash, pH, moisture and curd tension of curd were determined. The process flow chart for preparation of curd is given in flow chart 1.

Corresponding Author:

PN Khadse

PG Student, Animal Husbandry
and Dairy Science, College of
Agriculture, Nagpur,
Maharashtra, India

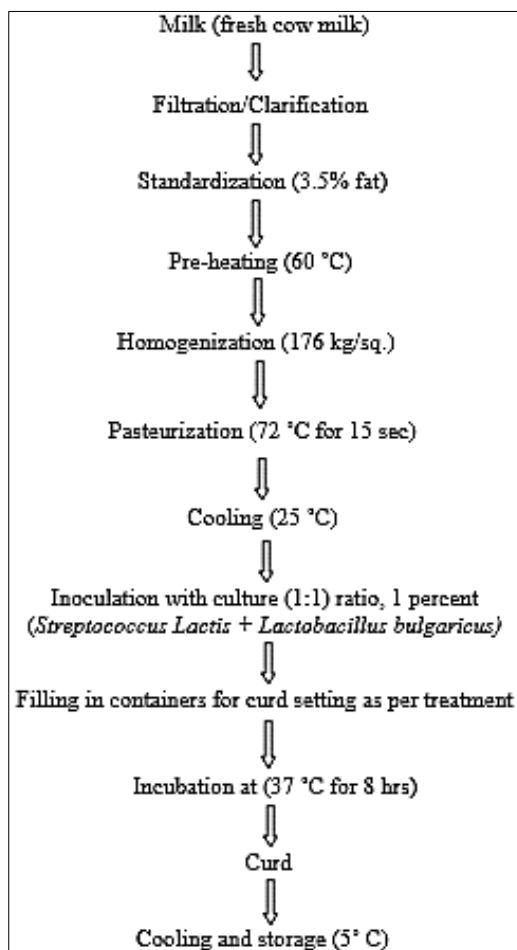


Fig 1: Flow diagram for preparing curd

The product was subjected to chemical analysis of the fat by Gerber's method, (IS: 1224, Part I, 1977), total solids (IS: 1479 Part-II 1961), acidity (IS-1166, Part I, 1973), protein by macro-kjeldahl method, (IS: 1479, part II, 1961), ash (IS: 1167, 1967), pH (by digital pH meter), curd tension was determined by using the H shapes knives used by Rao *et al.* (1964) ^[13] and moisture was determined by subtracting the total solid content from 100 in the sample.

The experiment was laid out in Completely Randomized

Design (CRD) with 5 treatments and 4 replications. The data obtained were analyzed statistically according to method described by Snedecor and Cochran (1994) ^[14].

Results and Discussion

The finished product of curd was subjected for the proximate analysis *viz.*, fat, protein, total solids, moisture, ash, acidity, pH and curd tension. The results obtained on account of this parameter are presented in Table 1.

Table 1: Overall average physico-chemical attributes of curd prepared by using different utensils

Treatments	Fat	Protein	Total solids	Moisture	Ash	Acidity	pH	Curd tension
T ₁	3.51	3.48	12.32 ^a	87.68 ^c	0.73 ^a	0.68 ^c	4.49 ^a	24.90 ^a
T ₂	3.52	3.47	12.25 ^c	87.75 ^c	0.67 ^c	0.72 ^c	4.41 ^c	24.37 ^c
T ₃	3.50	3.46	12.21 ^d	87.79 ^b	0.64 ^d	0.75 ^b	4.37 ^d	24.07 ^d
T ₄	3.52	3.44	12.18 ^e	87.82 ^a	0.61 ^e	0.77 ^a	4.33 ^e	23.57 ^e
T ₅	3.51	3.47	12.29 ^b	87.72 ^d	0.70 ^b	0.70 ^d	4.45 ^b	24.63 ^b
SE (m)±	0.007	0.017	0.007	0.007	0.009	0.006	0.011	0.087
CD @ 5%	-----	-----	0.022	0.022	0.028	0.019	0.033	0.265
Results	NS	NS	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.

Fat

The mean fat content of curd was found non-significant. Gandhi and Natrajan (2010) ^[5] proved that there is no increase in fat or protein content of milk during fermentation of curd.

Protein

The mean protein content of curd was found non-significant. De (2009) ^[4] also mentioned the protein per cent was 3.2 to 3.4 per cent in dahi.

Total solids

The highest total solids content was recorded for treatment T₁

(Earthen container) i.e. 12.32. The lowest total solids contents was recorded for treatment T₄ (Plastic container) i.e. 12.18 per cent. Goyal (1974)^[6] and Yadav *et al.* (1989)^[16] reported that earthen containers or kullars are used for setting of large quantities of curd due to increase in total solid content of curd.

Moisture

The highest moisture content was recorded for treatment T₄ (Plastic container) i.e. 87.82 per cent and lowest moisture content was recorded for treatment T₁ (Earthen container) i.e. 87.68 per cent. There was significant difference in moisture content of curd prepared by using earthen, stainless steel, aluminium, plastic and china clay utensils. Anonymous (2017) clay is a porous material, it has ability to absorb excess water and so that curd is much thicker and richer.

Ash

The ash per cent was highest in T₁ (Earthen container) samples i.e. 0.73 per cent and lowest in treatment T₄ (Plastic container) 0.61 per cent. De (2009)^[4] mentioned the ash per cent was 0.70 to 0.72 per cent in dahi.

Acidity

The highest acidity was observed in treatment T₄ (Plastic container) i.e. 0.77 followed by the treatment T₃, T₂, T₅ and lowest in treatment T₁ (Earthen container) i.e. 0.68 respectively. Anonymous (2017) reported that curd are acidic however, earthen container is an alkaline substance that can balanced out the acidity of curd and cuts down the sourness of curd and makes its taste sweeter.

pH value

The highest pH was observed in treatment T₁ (Earthen container) i.e. 4.49 followed by the other four treatments and lowest pH content was recorded for treatment T₄ (Plastic container) i.e. 4.33. Kagne (2018)^[11] reported that cow milk curd was excellent fermentation quality which is prepared in earthen container and had pH 4.55-5.90.

Curd tension

The curd prepared in earthen container (T₁) has highest curd tension i.e. 24.90 g. followed by other treatment and the curd prepared in Plastic container (T₄) has lowest curd tension 23.57g. Chaudhari *et al.* (2007)^[3] reported that the average curd tension in dahi prepared from buffalo milk was higher (43.44 g) than that prepared from cow milk (34.94 g).

Conclusions

It is concluded from the present study that, the physico-chemical composition of curd prepared in earthen container (T₁) was an excellent quality in terms of total solids, curd tension, acidity, ash, pH followed by china clay (T₅), stainless steel (T₂), aluminium (T₃), and plastic (T₄) container.

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