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 containerental 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.

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Fig 1: Flow diagram for preparing curd

<table>
<thead>
<tr>
<th>Treatments</th>
<th>Fat</th>
<th>Protein</th>
<th>Total solids</th>
<th>Moisture</th>
<th>Ash</th>
<th>Acidity</th>
<th>pH</th>
<th>Curd tension</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>3.51</td>
<td>3.48</td>
<td>12.32</td>
<td>87.68</td>
<td>0.73</td>
<td>0.68</td>
<td>4.49</td>
<td>24.90</td>
</tr>
<tr>
<td>T2</td>
<td>3.52</td>
<td>3.47</td>
<td>12.25</td>
<td>87.75</td>
<td>0.67</td>
<td>0.72</td>
<td>4.41</td>
<td>24.37</td>
</tr>
<tr>
<td>T3</td>
<td>3.50</td>
<td>3.46</td>
<td>12.21</td>
<td>87.79</td>
<td>0.64</td>
<td>0.75</td>
<td>4.37</td>
<td>24.07</td>
</tr>
<tr>
<td>T4</td>
<td>3.52</td>
<td>3.44</td>
<td>12.18</td>
<td>87.82</td>
<td>0.61</td>
<td>0.77</td>
<td>4.33</td>
<td>23.57</td>
</tr>
<tr>
<td>T5</td>
<td>3.51</td>
<td>3.47</td>
<td>12.29</td>
<td>87.72</td>
<td>0.70</td>
<td>0.70</td>
<td>4.45</td>
<td>24.63</td>
</tr>
<tr>
<td>SE (n=4)</td>
<td>0.007</td>
<td>0.017</td>
<td>0.007</td>
<td>0.007</td>
<td>0.009</td>
<td>0.066</td>
<td>0.011</td>
<td>0.087</td>
</tr>
<tr>
<td>CD @ 5%</td>
<td>------</td>
<td>-------</td>
<td>0.022</td>
<td>0.022</td>
<td>0.028</td>
<td>0.019</td>
<td>0.033</td>
<td>0.265</td>
</tr>
<tr>
<td>Results</td>
<td>NS</td>
<td>NS</td>
<td>Sig.</td>
<td>Sig.</td>
<td>Sig.</td>
<td>Sig.</td>
<td>Sig.</td>
<td>Sig.</td>
</tr>
</tbody>
</table>

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 other four treatments 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. 4.94 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 4.5-5.90.

**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 (T3), stainless steel (T2), aluminium (T3), and plastic (T4) container.

**References**

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