

## **Effect of storage temperature of raw cream, on quality of sour cream**

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### **Abstract**

Sour cream is a cultured dairy product made from light cream, which is used as a condiment. Quality and storage conditions of raw cream may influence the quality of sour cream. Therefore, a study was conducted to determine the effect of storage temperature of raw cream on quality of sour cream.

Microbiological quality [Total Colony Count (TCC), yeast & mould count and presence of coliforms], acidity and pH of raw cream stored for 4 h at four different temperatures [A/4°C, B /10°C, C /15°C, D /Room temperature (29±1°C)] were studied. Sensory evaluation of sour cream made using raw cream stored at the above temperatures were carried out with a trained panel of 10 members for texture, taste/sourness, aroma, colour and overall acceptability. Changes of the microbiological (coliforms, yeast and mould), physico-chemical (pH and acidity) parameters and keeping quality of sour cream were also studied during the storage period of one week at 5 °C. Complete Randomized Design was utilized and microbiological and physico-chemical data were analyzed using SAS computer package. Sensory data were analyzed using Kruskal Wallis one-way ANOVA non-parametric test with SPSS package.

The storage temperature of 29±1°C significantly affected the acidity development & changes of the pH of raw cream. However, other storage temperatures did not change the acidity and pH values. TCC was significantly (P<0.05) affected by the storage temperature. However, TCC exceeded the standard limit of 5x10<sup>5</sup> only in the raw cream sample stored at room temperature of 29±1°C. Yeast & mould count of raw cream stored at four different temperatures were significantly (P<0.05) different. At storage temperature of 4 °C, there was no significant difference (P>0.05) with initial yeast & mould counts. Organoleptic characters such as texture, colour and odour were not significantly (P>0.05) different in sour cream, which were made by raw cream stored at four different temperatures for four hours. However, flavour and overall acceptability were significantly lower in sour cream made using raw cream stored at 29±1°C. After one week of storage period at 5 °C, coliforms were negative in all four sour cream samples and yeast and moulds were detected only in samples C and D. Acidity and pH values were close to the standard values in sour cream made using raw cream stored at 4 °C at the end of the storage period of one week at 5 °C while the other samples

exceed the standard values. The results of this study showed that, there was an effect of storage temperature on raw cream quality and finally the quality of the sour cream. Sour cream could be made using raw cream stored at 4 °C, 10 °C and 15 °C for 4 hours, while raw cream stored at room temperature gave lower quality sour cream with respect to organoleptic and physico-chemical parameters. Above study indicated that, even though sour cream could be manufactured using stored raw cream at the mentioned temperatures (4 °C, 10 °C and 15 °C) for 4 hours, quality parameters were optimum in sour cream produced using the raw cream stored at 4 °C. Finally, it could be concluded that the refrigeration is essential to produce quality sour cream, if stored raw cream is utilized even for a short storage period of 4 hours.

**Keywords:** Sour Cream, Quality Characters, Storage Conditions