

Microbiological quality and safety of unfinished UHT milk at storage time-temperature abuse

ABSTRACT

The objective of this study is to determine the effect of storage time-temperature abuse on the microbiological quality and safety of unfinished UHT milk. Therefore, the present study attempts to imitate the condition of unfinished UHT milk during consumption. The UHT milk was opened and drunk and then the UHT milk was kept at three different storage temperatures of $15 \pm 1^\circ\text{C}$, $25 \pm 1^\circ\text{C}$, $35 \pm 1^\circ\text{C}$ for 2, 4, and 6 hours. The microbiological analysis had been conducted which includes the account of the number of bacteria regarding Total Plate Count (TPC), Yeast and moulds count, Mesophilic sporeformers count, Bacillus Cereus, Staphylococcus aureus, Total and Fecal Coliform, Listeria monocytogenes. At the 35°C storage temperature for 6 hours storage time for unfinished UHT milk, results showed mean of TPC $7.91 \log_{10}\text{CFU/mL}$, Yeast and Moulds counts $6.84 \log_{10}\text{CFU/mL}$, Mesophilic sporeformers counts $7.55 \log_{10}\text{CFU/mL}$, Bacillus cereus counts $7.73 \log_{10}\text{CFU/mL}$, Staphylococcus aureus counts $8.30 \log_{10}\text{CFU/mL}$ and Listeria monocytogenes counts 100CFU/mL . This indicates that unfinished UHT milk is not safe to consume at this condition since value of all bacteria counts exceeded the maximum limit (100CFU/mL for L. monocytogenes and $5.00 \log_{10}\text{CFU/mL}$ for others) permitted by Food Act 1983 (Act 281) and Food Regulations 1985 and Netherlands National Food and Commodities Law. Interestingly, there is no detection of total and fecal coliform in the sample.

Keyword: UHT milk; Unfinished; Storage temperature; Storage time.