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The Occurrence of Sporeformers in Processed Milk from Household Refrigerators and The Effect of Heat Treatment on Bacillus Spores Activation

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Abstract : In recent years milk contamination has become a major problem in households; due to the likely occurrence of bacteria, even after the milk has been processed. One such genus of bacteria causing unwanted growth is Bacillus. This research project looks at the presence of spore formers in processed milk from household refrigerators and the effect of pasteurization and high temperature on Bacillus spores activation. 24 samples each of UHT milk and pasteurised milk from 24 households were sampled for the presence of spore formers. While anaerobic spore formers were not found in any of the samples, the average aerobic spore formers in UHT milk and pasteurized milk however were 5.77 cfu/ml and 5.88 cfu/ml respectively. After sequencing, it was detected that the mixed culture contained Bacillus cereus, for both pasteurised and UHT milk samples. For the activation study, raw milk samples were collected and subjected to four different temperatures; 65˚C, 72˚C, 80˚C, 100˚C respectively. Samples were stored for 7 days at 5˚C and 10˚C and analysed daily. The average aerobic spore formers in raw milk for samples stored at 5˚C range between 4.67-6.00 cfu/ml while it ranges between 4.84-6.00 cfu/ml at 10˚C, signifying that the high temperatures could have resulted in germination of dominant spores. Statistical analysis conducted on these results indicated a significant difference between the numbers of colonies present at the different treatment temperatures the bacterium was exposed to. This work showed that household milk may constitute public health risk furthermore; pasteurization and higher temperatures may not be effective to remove aerobic spore formers because of Bacillus spores activation.

Keywords : sporeformers, bacillus, spores, activation, milk
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