Abstract:

The use of lactoperoxidase system (LP-system) in temporary preservation of raw milk has been found useful particularly in places where refrigeration is not feasible. The activity of this system, however, varies from species to species and there are no reports on its effect in camel milk. This study was conducted to investigate the preservative effect of the LP-system on raw camel milk. Camel milk samples were obtained from Kajiado, Isiolo and Nanyuki districts, Kenya and LP-system was activated by the addition of hydrogen peroxide (H_2O_2) to a concentration of 8.5ppm Changes in total viable bacterial counts and titratable acidity in LP-activated and nonactivated (control) camel milk were then determined during storage at 10, 20 and 30oC. The combined effect of increasing levels of thiocyanate (NaSCN) and hydrogen peroxide (H_2O_2) on antibacterial activity of LP-system in raw camel milk was investigated at 30ºC by monitoring changes in total viable bacterial counts and lactic acid development in raw camel milk at NaSCN:H_2O_2 concentrations ratios of 0, 10:10, 20:20, 30:30 and 40:40ppms. Natural concentration of thiocyanate occurring in the camel milk from the three districts ranged from 9.7 to 36.4 mg/l and respective districts were significantly different ($p<0.05$) from each other. No additional amount of thiocyanate was, therefore, used to activate the LP-system. Microbial growth was halted for 15, 17 and 76 hrs at 30, 20 and 10oC, respectively by activation of the LPsystem in raw camel milk at 8.5ppm. Viable counts increased significantly ($p<0.05$) during storage at 10, 20, 30oC conditions. Shelflife was extended by 19 hrs during storage at 10 and 20oC and 4 hours at 30oC. Increased levels of NaSCN and H_2O_2 significantly ($p<0.05$)delayed bacterial growth and lactic acid production. Shelflife of the camel milk as determined by lactic acid production was 4 hrs for control and increased to 6, 12, 16 and 16 hrs for NaSCN: H_2O_2 ratios of 10:10, 20:20, 30:30 and 40:40 ppm, respectively. The present investigation shows that by activating the LPSystem, it is possible to extend the storage period of raw camel milk and that the effect of the LP-System on the microbes varies with temperature of storage and levels of thiocyanate and H_2O_2. Practical application would be achieved by controlled activation using commercial LP-system kits for pooled camel milk at collection centers and combined with cooling facilities where possible for further extension of keeping quality.