Predisposing Factors for Microbial Loads in Camel Milk Along the Dairy Value Chain in Kenya

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Abstract

Camel milk contributes greatly to the livelihoods of pastoral communities in Kenya. However, these benefits are reduced by milk spoilage associated with high microbial loads. The aim of this study was to identify predisposing factors for increase in microbial counts in milk along the value chain from Isiolo to Nairobi, Kenya. Data collection was done in August 2015 in both Isiolo county and Nairobi City. Three key informants were interviewed to map the value chain while structured interviews with 89 operators from who milk was sampled were conducted. A total of 216 milk samples were taken along the chain and analysed for total viable counts (TVC) and coliform counts (CC). The camel milk value chain was mapped from production to the market. TVC and CC increased significantly from log10 4.91 ± 1.04 cfu ml^{-1} and log10 3.68 ± 1.28 cfu ml^{-1} at production respectively to log10 7.52 ± 1.32 cfu ml^{-1} and log10 6.42 ± 1.13 cfu ml^{-1} in Nairobi respectively. At production, milk quality met the Kenya Bureau of Standards specification for raw camel milk but milk in Nairobi did not. Milking persons neither washed their hands nor cleaned the camels' udder before milking; and non-food grade plastic containers were the only receptacles used for milk along the chain. Microbial counts significantly increased with milk delivery time from production to secondary collection centre in Isiolo town with $p = 0.0045$. However, the relationship between microbial counts and milk temperature; microbial counts and the volume of milk handled; and microbial counts of milk handled by individuals who have had training on milk quality and those who have never been trained, was not significant. Poor milking hygiene, use of non-food grade plastic containers and holding milk at high temperature for long time were implicated for high microbial counts in milk. Training of operators should be complemented by programs for water supply to facilitate hygiene during milking. Access to low cost food grade plastic containers as well as cooling milk within 2hr of milking, and uptake of cost effective milk value addition will increase milk shelf-life enabling access to distant markets.

Keywords: Camel, microbial load, milk, predisposing factors

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