Tropentag, September 17-19, 2018, Ghent

"Global food security and food safety:
The role of universities"

Manufacture and Extension of Shelf-Life of Camel Milk Yoghurt to Enhance Food Security in Arid and Semi-arid Areas of Nothern Kenya

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Abstract

Camel milk is considered the "white gold" of the arid and semi-arid areas and is rich in nutrients and medicinal properties. Camels produce milk year round and produce when other livestock stop or die from dehydration. Although camel milk is available under harshest climatic conditions, making yoghurt and other fermented products with desired viscosity is challenging due to difference in structure of β-casein compared to cow's milk. Even if yoghurt can be successfully prepared, yoghurt requires cold storage for extended shelflife. In arid and semi-arid areas temperatures are high and limited households can afford refrigeration facilities. Due to a sparse population, there is also poor distribution of power i.e. electricity. It is therefore important to evaluate methods of extending the shelf-life of camel milk yoghurt other than refrigeration. The objective of this study was to evaluate refrigeration, use of chemicals (potassium metabisulphate), heat (pasteurisation) and natamysin in extending the shelf-life of camel milk yoghurt. Camel milk was obtained from vendors in Isiolo town, and transported to Laboratories in Meru University of Science and Technology. Milk was assessed for quality. Yoghurt was prepared with starch (0–2 %), Calcium chloride (0–0.085 %), sugar (5 %). The fermentation was carried out under controlled conditions in a cheese vat. Following fermentation the yoghurt was divided into four portions. One portion was refrigerated (4–8° C), the second was pasteurised (90° C, 30 min), and the remaining portions were preserved with either potassium metabisulphate or natamysin. The pasteurised and yoghurt with added chemicals were stored at ambient temperature (25 ± 2 °C). The yoghurt stored under different preservation methods were assessed for quality parameters including acidity, viscosity and microbial load over a period of 21 days. The changes in quality parameters was compared with control and considered significant at $P \leq 0.05$. The yoghurt preserved with natamysin kept for the longest period (>21 days) at ambient temperature without considerable changes in quality parameters. This study shows that it is possible to extend the shelf-life of camel milk yoghurt at ambient temperature without pronounced changes in quality parameters ensuring availability of nutritious food over long periods leading food security.

Keywords: Camel milk, camel milk yoghurt, camel milk yoghurt shelf-life, food security

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