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"Solidarity in a competing world — fair use of resources"

Smoking of Milk Containers Improved Microbiological and Organoleptic Quality of Fermented Milk

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Abstract

The effect of fumigating milk containers was examined by smoking, using wood from one of the three following tree species (*Acacia etbaica, Olea europaea* ssp. *cuspidata* and *Cadia purpurea* vs. a non-smoked control) on biochemical, microbiological and organoleptic quality of milk, traditionally fermented for 0, 48, 96 or 144 hours. A plastic milk container of 1.2 liter capacity was fumigated by inverting it over smoking chips of 5 g of the specific tree species until the smoke died out (about 2–3 minutes). About 700 ml of milk were stored in this container at ambient room temperature of 24±0.8°C for the respective fermentation period. The change in pH, titratable acidity (TA %), standard plate count (SPC) and coliform count (CC) of the fermented milk from each treatment was determined. Organoleptic quality parameters (aroma, flavor, appearance and overall acceptance) of the fermented milk were evaluated by 10 panelists based on a 5 point hedonic scale. An interaction effect of container smoking and fermentation period ($p < 0.05$) was observed for TA, SPC and CC values. SPC and CC values tended to increase till 96 hour fermentation period in all treatment groups and slightly reduced thereafter. A rapid drop of pH was observed in the first 48 hours of incubation. The SPC of milk samples stored in the smoked containers ranged between 6.84–7.53 log CFU ml^{-1} as compared to non-smoked container (7.66 log CFU ml^{-1}). TPC and CC in milk fermented for 48 and 96 hour stored in a container smoked with *Acacia etbaica* were reduced by 1.39 and 0.87 log CFU; and 0.98 and 1.09 log CFU as compared to their respective values in the non-smoked containers, respectively. Furthermore, flavor, appearance and overall acceptance scored better in smoked as compared to non-smoked containers.

Keywords: Coliform count, pH, smoking, titrable acidity, standard plate count

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