

TITLE: MICROBIOLOGICAL QUALITY OF ARTISANAL CHEESE MADE FROM THERMIZED AND RAW MILK DURING RIPENING

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ABSTRACT

Artisanal raw milk cheese is largely produced in the state of Minas Gerais, Brazil. They are produced with the addition of a natural whey starter, named “pingo” and are ripened for 17-22 days. The microbiological safety and quality of raw milk cheese is influenced by milk quality, environmental hygiene, microbial community and ripening process. The aim of this study was to evaluate the influence of raw and thermized milk on the microbiological quality of artisanal cheeses during ripening for 60 days. The cheese model was manufactured following the practices adopted by the cheese makers in Serra da Canastra, Minas Gerais. Raw milk, donated by a dairy industry, or thermized milk, heated at 63°C for 5 minutes and cooled at 38°C, were inoculated with 0.3 % of “pingo”, obtained from local cheese maker, and 0.02 % of commercial rennet. Cheeses were salted, placed on wooden shelves and ripening at 20°C and relative humidity between 50 and 65 % for 60 days. The experiments were carried out in two independent trials. Lactic acid bacteria, coliforms, *E. coli*, and yeast and molds were determined at 0, 22, 45 and 60 days of ripening. Thermization process reduced coliforms by 2.6 ± 0.6 log cfu/mL and *E. coli* by 2.1 ± 1.1 log cfu/mL in milk. On the first day of ripening coliforms counts increased to 7.1 ± 0.4 log cfu/g and *E. coli* to 6.6 ± 0.8 cfu/g in raw milk cheese, while counts of thermized milk cheeses were 2 log lower. Cheese produced with thermized milk attended Minas Gerais legislation for coliforms (< 3.7 log cfu/g) and *E. coli* (< 2.7 log cfu/g) at day 22, while 60 days were necessary for raw milk cheese. The number of lactic acid bacteria was 1 log cfu/g higher in cheese produced

with raw milk in the first week of ripening, however until the end of 60 days there were no significant ($p > 0.05$) difference. Yeast and molds counts were not significantly ($p > 0.05$) different for both cheeses. Our results demonstrated that cheese produced with thermized milk, with a lower count of coliforms and *E. coli*, had a higher microbiological quality and could be ripened for a shorter period.

Keywords: Canastra cheese; Raw Milk; Thermized Milk; Microbiological Quality

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