TITLE: EFFECTS OF RIPENING ON THE AUTOCHTHONOUS MICROBIOTA OF CHEESES MADE FROM RAW MILK

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ABSTRACT:

During ripening of cheese several biochemical reactions occur that result in significant changes in pH and moisture that can directly influence the development of various spoilage and pathogenic microorganisms. The aim of this study was to evaluate the effect of ripening on the autochthonous microbiota of cheeses made from raw milk. A cheese, of type Minas, was made with raw milk and kept at room temperature for 60 days and underwent to analyzes on the first day and every 10 days (T0 to T6); the raw material (raw milk) and curd were also analyzed. The microbiological analyzes conducted included count of lactic acid bacteria (LAB), mesophilic aerobic microorganisms (MA), yeasts and molds (YM), coliforms at 35°C (CT), coliforms at 45°C (CTt), psychrotrophic microorganisms (PSI), *Staphylococcus* positive coagulase (SPC) and for the detection of *Listeria monocytogenes* and *Salmonella* spp. Moisture content of the cheese aliquots were also determined. Results showed that raw material (milk) had high counts of microorganisms researched (LAB 7,5 x 10^5 CFU/mL; MA 1,0 x 10^6 CFU/mL; YM 1,7 x 10^3 CFU/mL, CT 4,3 x 10^4 MPN/mL, CTt 1,5 x 10^3 MPN/mL; PSI 8,4 x 10^4 CFU/mL) and *L. monocytogenes* and *Salmonella* spp. were absent. Curd of the cheese showed even higher scores: 1,4 x 10^7 CFU/g for LAB; 2,0 x 10^9 CFU/g for MA; 1,1 x 10^4 CFU/g for YM; >1,1 x 10^7 MPN/g for CT; 2,1 x 10^6 MPN/g for CTt; 5,5 x 10^6 CFU/g for PSI; 9,3 x 10^4 CFU/g for SPC. It was observed that these microorganisms counts remained high until T2, only showing reduction on T3. It should be noted that the final count of T6 were still high (LAB 9,0 x10^3 CFU/g, MA 2,1 x 10^4 CFU/g, YM 4,0 x 10^5 CFU/g, CT 2,4 x 10^4 MPN/g, CTt 2,4 x 10^4 MPN/g) and the presence of *L. monocytogenes* and *Salmonella* spp. were not detected. Moisture contents (%) observed during the 60-day maturation period maintained at room temperature and relative humidity of the uncontrolled air were 55% at T0, 31% at T1, 16% at T2, 14% at T3 , 12% in T4 and in the end remained at 9%. It is important to highlight that, already in T1, moisture content would disqualify the product, since the cheese would already be classified as low humidity because it had a humidity lower than 36%. Results showed that maturation period, on the conditions proposed by this research, did not guarantee microbiological safety of the product and contributed to its deterioration, making it unsuitable for consumption.

Keywords: coliforms, food security, lactic acidic bacteria, Staphylococcus positive coagulase, yeast and molds