

**TITLE:** MICROBIOLOGICAL QUALITY OF FRESH ARTISAN CHEESE COMMERCIALIZED IN CANTON CAYAMBE– ECUADOR

**AUTHORS:** CONTERO, R.E.; AQUINO, E.L.; SIMBAÑA, P. E.; DE LA CRUZ, E.; ECHEVERRIA, E.J.

**INSTITUTION:** UNIVERSIDAD POLITECNICA SALESIANA (AV. ISABEL LA CATÓLICA N 23-52 Y MADRID, POSTAL CODE 1712-536, QUITO, ECUADOR)

## **ABSTRACT**

The Ecuadorian dairy industry processes 5.5 million litres of milk per day and more than a third of the production is used to make cheese. Locally, fresh cheese is the main product sold. This cheese is unripe, of relatively firm texture, slightly granular, prepared with whole or semi-skimmed milk and coagulated with enzymes and organic acids, without the use of lactic cultures. It contains 80% moisture and 45-60% fat. It is manufactured by dairy industries with a production volume between 100-250 litres/day, of which 45% of raw milk comes from qualified production systems that do not maintain a col. These factors may increase the risk of contamination by pathogenic bacteria in the final product. Even if legislation worldwide strictly recommends the use of pasteurised milk for the production of dairy products, in Ecuador these cheeses are not always made with the principles of good manufacturing practices. Sixty-three percent of the producing companies are family-run and do not have sanitary registries, and the cheeses are commercialized freely in the informal market. The objective of this work was to analyse the microbiological quality and compliance with current Ecuadorian regulations (Standard NTE-INEN-1528) for cheeses sold in markets and bakeries of the urban and rural parishes of Canton (Municipality) Cayambe (north of Ecuador) and analyse the environmental conditions during the sale. In total 29 samples were collected between April and May 2014 with three monthly replicas. At each sampling point, two cheese units were acquired to homogenize the sample. The collection was made following standardised procedures and data registration. Microbiological analyses of enterobacteria were performed using the 3M Petri film plates counting method. For *Salmonella* and *Listeria monocytogenes* we used the immunofluorescence method (ELFA) (MiniVIDAS-Biomérieux, France). The results of this study indicate that not found presence of *Salmonella*, 95% of the cheeses did not comply with the maximum permissible indicator for enterobacteria (>1000 CFU/g) and 32% of the samples presented *Listeria monocytogenes*. Regarding the environmental conditions during the sale, 12% of the samples showed temperatures >14°C and 40% did not comply with the labelling requirements such as batch number, date of manufacture, and expiration date. The findings suggest that this type of cheeses breaks the current standard and the product presents risks for the health of consumers.

**Keywords:** artisan cheese, fresh cheese, *Salmonella*, *Listeria monocytogenes*.

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