

PREVALENCE AND PERSISTENCE OF *LISTERIA* SPP. AND *LISTERIA MONOCYTOGENES* IN PROCESSED MILK FROM SMALL RETAILERS IN TIRANA, ALBANIA

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Abstract

Although milk is a primary source of high-quality protein and accessible nutrients, it also represents the ideal habitat for the growth of a range of pathogenic microorganisms such as *Listeria monocytogenes* that cause listeriosis in human populations. Globally, the demand for dairy products has grown significantly in recent decades and Albania shares the same patterns in terms of consuming milk and dairy products. The increase in production in this sector goes hand in hand with the raising of awareness to ensure the quality and safety of milk to fulfill the demand of local and wider consumers. Based on the aforementioned, the main aim of this study is to evaluate the occurrence and persistence of *Listeria* spp. and *Listeria monocytogenes* in different processed milk samples marketed in small retailers in Tirana city.

A total of 252 milk samples were collected from small retailers in six different areas in Tirana. All the samples are divided into three major categories based on their technological process: Pasteurized Milk (PM) samples (n = 90), Ultra High Temperature (UHT) milk samples (n = 126), and Sterilized Milk (SM) samples (n = 36). Furthermore, all the samples belonged to different dairy companies from Albania, dairy companies from the Western Balkans, and dairy companies from the European Union. Growth, isolation, and confirmation of *Listeria* spp. and *Listeria monocytogenes* were performed following ISO 11290-1:2017 protocol. All the data were analyzed with the statistical program SPSS 29.00.

Our data show that the prevalence and persistence of *L. monocytogenes* and *Listeria* spp. depend on the technological process that the milk samples were subjected to. *Listeria monocytogenes* was detected in 12.2% (n = 11) of the total PM samples analyzed and in 0.79% (n = 1) of the total UHT milk samples analyzed. None of the SM samples resulted positive for the presence of *Listeria monocytogenes*. The paired t-test shows a statistically significant difference in means between the type of processed milk and milk samples that resulted positive for the presence of *Listeria monocytogenes* $t(13) = 4.809$, $p < .001$.

The data presented in this research have underlined gaps that need to be filled regarding pathogen control throughout the whole chain of milk production, and marketing environments up to consumers. Future research should consider the examination of milk processing environments in Albania for better traceability of *Listeria monocytogenes* in milk.

Key words: *Listeria monocytogenes*, *Listeria* spp., Processed milk, ISO 11290-1:2017 protocol, SPSS 29.00.