

Compliance of Minas Artisanal Cheese official samples with minimum ripening time and moisture criteria and their relations with hygiene indicator microorganisms counts

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This study aimed to provide a critical analysis of official data obtained by Instituto Mineiro de Agropecuária (IMA) regarding the compliance of ripening time and moisture criteria defined by the Minas Gerais state, Brazil, for Minas Artisanal Cheese (in Portuguese: Queijo Minas Artesanal, QMA), and how these parameters can influence the counts of hygiene indicator microorganisms. QMA samples collected between January 2010 to May 2023 (n = 1,803) were analyzed. Few non-compliant samples were identified due to the absence of alkaline phosphatase and presence of amid. High relative frequencies of non-compliance with ripening time were identified in QMA samples from producer regions of Cerrado, Serra do Salitre, Araxá and Serro (88.5%, 66.7%, 63.4% and 62.2%, respectively), and high relative frequencies of non-compliance to moisture were identified in QMA samples from Serro, Serra do Salitre and Cerrado (36.5%, 29.0% and 24.4%, respectively). Counts of total coliforms, Escherichia coli and coagulase positive staphylococci were significantly higher ($p < 0.0001$) in samples in non-compliance to the minimum ripening time and moisture content; when these data were analyzed per producing region, this trend was observed only for QMA produced in Serro. The lack of data regarding ripening time hampered an adequate analysis over the years, as this information was absent for all QMA samples collected and processed since 2022 (n = 150): such information must be systematically recorded during QMA sampling for surveillance programs, due to its relevance for identity, quality and safety. Our data also indicate the need to implement educational programs to improve the adequacy of QMA to official criteria.

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