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Evaluating Hygienic Milking Practices, Good Manufacturing Protocols, Subclinical Mastitis Incidence, and Quality of Coalho Cheese in a State-Inspected Dairy Plant in Bahia

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The Coalho Cheese production is crucial to the economy of the Brazilian Northeast, especially in Bahia. However, subclinical mastitis in dairy herds adversely affects milk quality and the manufacturing process of this cheese, resulting in significant economic losses. Preventive measures such as proper hygiene, effective animal management, and implementing Good Agricultural Practices (GAP) and Good Manufacturing Practices (GMP) are essential to address this issue. Conducting microbiological and physicochemical analyses of the cheese is critical to ensure its quality. Furthermore, antimicrobial resistance, particularly in Staphylococcus aureus, is an escalating concern requiring thorough investigation to develop effective control strategies. This study assesses the GAP and GMP in Coalho Cheese production, emphasizing the significance of hygienic-sanitary conditions and the management of antimicrobial resistance to enhance product quality. The research was carried out on a farm in Bahia, which includes a Milk Processing Unit under State Inspection. During milking, 21 lactating cows were screened for clinical mastitis using the screen bottom cup test and for subclinical mastitis using the California Mastitis Test (CMT). Seven cows tested positive on the CMT, and their milk was collected for microbiological isolation, antibiogram, and coagulase tests. Additionally, surface swabs from the processing unit were taken and analyzed before and after Coalho Cheese production to detect mesophiles, total coliforms, and thermotolerant coliforms. The produced cheese was also subjected to physicochemical analyses to measure moisture (g/100g) and fat in dry matter (g/100g). Microbiological analyses included testing for total and thermotolerant coliforms, coagulase-positive *Staphylococcus*, *Salmonella* sp., and *Listeria monocytogenes*. The study evaluated 21 cows, identifying seven with subclinical mastitis. Microbiological isolation identified coagulase-positive *Staphylococcus* in all samples, with resistance to antibiotics such as penicillin and ampicillin. Surface swabs taken before and after Coalho Cheese production showed mesophile counts exceeding acceptable limits, indicating hygiene deficiencies. However, total and thermotolerant coliform counts were within standards, except in the storage tank post-production. The physicochemical analyses of Coalho Cheese indicated that moisture and fat content were within normal ranges, suggesting that the milk quality did not compromise the product\'s individual quality parameters. Pasteurization effectively controlled pathogenic microorganisms, ensuring the cheese\'s microbiological safety. This research underscores the necessity to enhance hygiene and control measures in milk and dairy production and highlights the importance of judicious antibiotic use to prevent microbial resistance. Ensuring the quality and safety of dairy products is vital for maintaining public health and supporting economic stability.

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