

The Microbiology of Cheeses Produced in the Metropolitan Region of Curitiba

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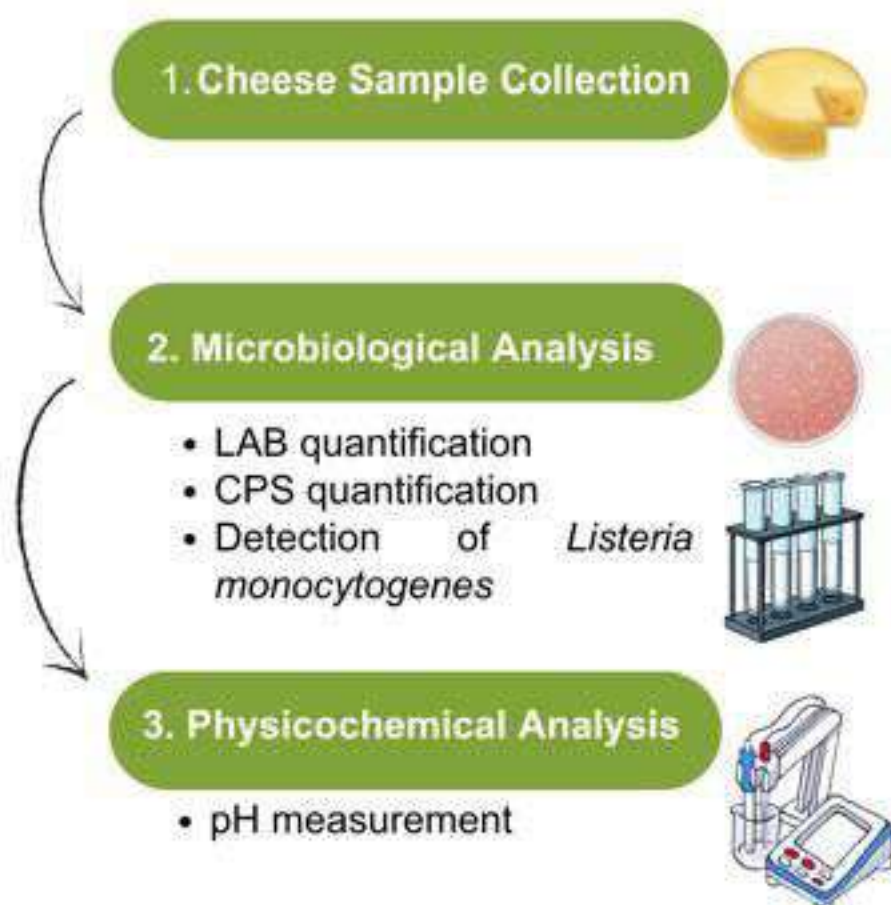
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INTRODUCTION & AIM

Cheese is a popular food in Brazil, but its microbiological safety can be compromised by the presence of potentially pathogenic microorganisms, such as coagulase-positive *Staphylococcus* (CPS) and *Listeria monocytogenes* [1,2]. However, there is a lack of published data on the microbiological quality of cheeses produced in the Metropolitan Region of Curitiba (MRC), which limits the understanding of regional risks to public health and the development of specific food safety strategies. This study seeks to fill this gap by providing unpublished data on microbial counts and fermentation quality in locally produced cheeses. Lactic acid bacteria (LAB) are important for fermentation, helping to develop flavor and inhibit the growth of pathogens. However, the lack of sanitary control in production can result in contamination. There are no reports on the microbiological conditions of cheeses produced in the MRC, so this study aimed to quantify LAB and CPS, as well as to investigate the presence of *L. monocytogenes* in cheeses from the MRC, in addition to evaluating pH, an important parameter for product safety and quality.

METHOD

Five cheese samples were collected from two cheese factories in the MRC, totaling 10 samples. In the microbiological analysis, LAB and CPS were quantified, and the presence of *Listeria monocytogenes* was investigated. The pH of the cheeses was also evaluated as an important parameter for product safety and quality.



RESULTS & DISCUSSION

Parameter	Factory 1	Factory 2
CPS	Above permitted levels	$\leq 1.0 \times 10^2$ CFU/g (not detected)
<i>L. monocytogenes</i>	Not detected	Not detected
LAB	Satisfactory counts (good fermentation)	Satisfactory counts (good fermentation)
pH	4.8 – 5.1 (efficient fermentation)	6.57 – 6.67 (inadequate fermentation)

Table 1. Microbiological and physicochemical results of cheese samples from two factories in the MRC.



Figure 1. Positive result of coagulase-positive *Staphylococcus* in Plasma Coagulase-EDTA medium, showing clot formation.



Figure 2. Plates after 24–48 h incubation at 35 °C showing differential selective plating. Left: Palcam Listeria Selective Agar; right: Oxford Agar (OXA).



Figure 3. MRS agar plate after overlay and incubation at 35 °C for 48 h, showing lactic acid bacteria growth.

CPS were detected at levels above those permitted in the samples from Cheese Factory 1, indicating shortcomings in hygiene and sanitary conditions. No CPS ($\leq 1.0 \times 10^2$ CFU/g) were detected in Cheese Factory 2. *L. monocytogenes* was not detected in any of the samples evaluated. On the other hand, the LAB count was satisfactory in both cheesemakers, suggesting good fermentation. The pH of the samples varied between 4.8 and 5.1 at Cheese Factory 1, indicating efficient fermentation, while at Cheese Factory 2, the higher pH (6.57–6.67) suggests problems in the fermentation process.

CONCLUSION

These results highlight the importance of hygienic control and fermentation for the safety and quality of the cheeses and provide unpublished data on cheeses produced in the Metropolitan Region of Curitiba.

REFERENCES

