Microbiological and physical-chemical evaluation of „Covilhete" – A Portuguese regional salted pasta filled with cooked meat

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Introduction: „Covilhete" is a product from northern Portugal made of flour, butter, water and salt, molded and stuffed with a preparation of minced cooked meat. Due to its economic importance in the Region of Trás-os-Montes, it is important to know the microbiological and nutritional characteristics of the product, from the perspective of food safety and quality. The main objective of this study was to determine the microbial and nutritional characteristics of „Covilhete", during processing until its consumption, which were previously unknown.

Material and Methodology: In this study, 54 samples were used, collected in six batches from a local producer. Each batch consisted in three samples prepared in three different times: raw, after cooking and after the exposure time. L. monocytogenes, S. aureus, Salmonella spp., B. cereus, E. coli, Cl. perfringens, Enterobacteriaceae, lactic acid bacteria (LAB), total viable counts (TVC) at 30 °C and molds/yeasts. In addition, pH, water activity, fat, moisture, ashes, protein and chloride content were determined.

Results: A reduction of microbiological levels over time/time of production. No detection and enumeration of L. monocytogenes, S. aureus, Salmonella spp. were observed or enumeration of B. cereus and Cl. perfringens, revealing good microbiological quality of the product for these pathogenic microorganisms. Similarly, in the remaining microorganisms, a decrease in microbiological levels was observed over time, which indicates that the cooking temperature is sufficient to eliminate most microorganisms. However, the result obtained for E. coli is worrying and corrective measures should be taken.

Table 1 – Evolution of the means to different microorganisms over time, expressed as log (cfu/g).

Time	LAB	TVC	Enterobacteriaceae	E. coli	Molds/Yeasts
1 (gross)	7,164	6,965	4,043	6,97	6.30
2 (after cooking)	0.00	0.343	0.484	0.34	0.00
3 (End of exposure)	0.397	1,023	0.333	1.02	0.00

The values of pH, moisture, chlorides, ash, fat and protein content do not differ between lots.

The average protein content is 8.48% and the average fat content is 22.38%. The estimated value recommended by the WHO of daily protein intake is 10 to 15%, while the percentage value of free fat recommended by the WHO is 15-30% (WHO, 2018).

Conclusion: The data obtained in this study draw attention to the importance of implementing effective measures to reduce fat content, thus reducing the risk of coronary heart disease and mortality from non-communicable diseases. It was possible to verify the effect of temperature over the 3 times. The preservation of the samples was guaranteed, and the consumption of the product should occur on the same day to avoid degradation by the development of microorganisms and loss of organoleptic characteristics.

Although the results generally suggest a product with good microbiological quality for most microorganisms, the levels of E. coli detected in food in recent times should be considered worrisome and corrective measures should be taken.

Literature:

World Health Organization. (2018). Replace trans fat: an action package to eliminate industrially produced trans fatty acids. World Health Organization - WHO.