



MICROBIOLOGICAL SAFETY IN SUCCEDANEUM ITALIAN SALAMI

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Background

The Italian salami is characterized by being a fermented sausage that takes thirty days for its production, where in the first seven days the fermentation occurs and in the others twenty-three days there is the formation of its characteristic flavor (Fernández *et al* 2001 and Demeyer *et al*, 1996). The substitution of starter cultures in Italian salami production by the addition of encapsulated organic acids followed by cooking will assure a microbiological safety product and reduce the time of its production (Terra, 1998 and Lizaso *et al* 1999).

Objectives

The objective of this work was to produce differentiated Italian salami by substituting the starter cultures by the addition of encapsulated organic acids followed by cooking. This fact will make possible to produce similar Italian salami in a shorter time and without the need of ripening house.

Materials and methods

To the elaboration of a succedaneum Italian salami, three treatments were used as follow: Treatment 1 - control, Treatment 2 - received 500g of MEATSHURE encapsulated citric acid and treatment 3 – received 400g of MEATSHURE encapsulated lactic acid. The pork meat was cut in a 16 mm disk and the bovine meat was cut in a 3 mm disk. After grinding salt, cure meat mixture and others ingredients were added to the basic mass (Terra, 1998). Starting from the basic mass, the three treatments were separated, where T1 is the basic mass (control), T2 and T3 had the addition of encapsulated organic acids as above. The treatments were equally stuffed in fibrous case (40 mm), previously put in a 2% lactic acid solution, identified and cooked in the incubator. The encapsulated citric acid (MEATSHURE TM 341) is composed by 50% of citric acid and 48 - 52% of vegetable oil partially hydrogenated. The encapsulated lactic acid (MEATSHURE TM 509) is composed by 30% of lactic acid, 48 - 52% of calcium lactate and 48 - 52% of partially hydrogenated of cotton and soybean oils. The proportion of encapsulated organic acids added to the treatment of the succedaneum Italian salami was 1% of citric acid and 0,82% of lactic acid. Total mesophilic aerobic microorganisms, coagulase positive *Staphylococcus* and *Escherichia coli* determinations were done.

Results and discussion

The succedaneum Italian salami was done in 24 hours. The experimental results demonstrated the reduction of meat initial pH (6,1) to 5,3 in the treatment with encapsulated lactic acid and 5,1 in the treatment with encapsulated citric acid. The initial microbiological counts before the acids addition and the cooking was 10^6 UFC·g⁻¹ for the mesophilic aerobic bacteria, 10^3 UFC·g⁻¹ for *E. coli* and coagulase positive *Staphylococcus*. The Italian salami treated with encapsulated organic acids followed by cooking presented a significant microbiological reduction. The salamis treated with lactic acid showed 10^3 UFC·g⁻¹ for mesophilic aerobic microorganisms, 10^2 UFC·g⁻¹ for *Staphylococcus* and 10^1 UFC·g⁻¹ for *E. coli* (Figure 1). In the salami treated with citric acid presented less than 10^1 UFC·g⁻¹ counts for all tested microorganisms (Figure 2). In none of the salamis treated with encapsulated acids followed by cooking was observed the presence of coagulase positive *Staphylococcus*. The addition of encapsulated organic acids in the salami partially substituted the action of starter cultures, acidifying the mass and consequently making a safe product for the costumer. The reduction of microbial contamination followed the pH reduction in the treated samples presented a larger microbiological safety for the succedaneum Italian salami.



Conclusions

The production of acidified and cooked Italian salami demonstrated to be an option for microbiological safe products with low cost and reduced time of production.

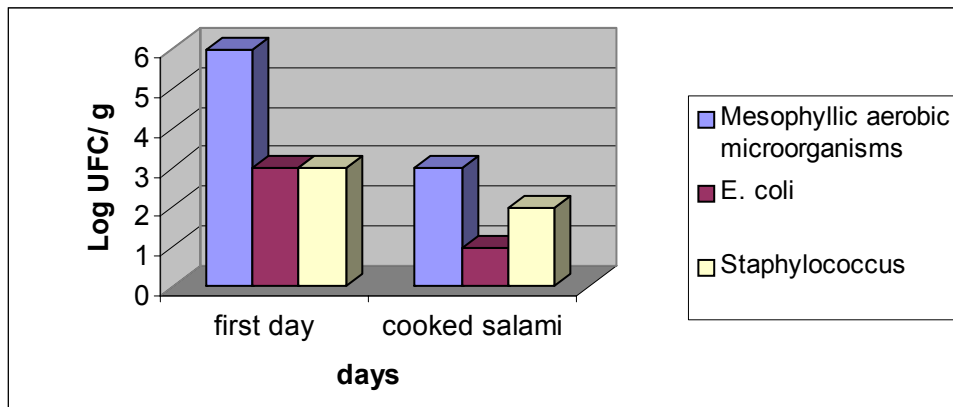


Figure 1 – Mesophilic aerobic microorganisms, *E. coli*, and coagulase positive *Staphylococcus* of a cooked salami treated with encapsulated lactic acid.

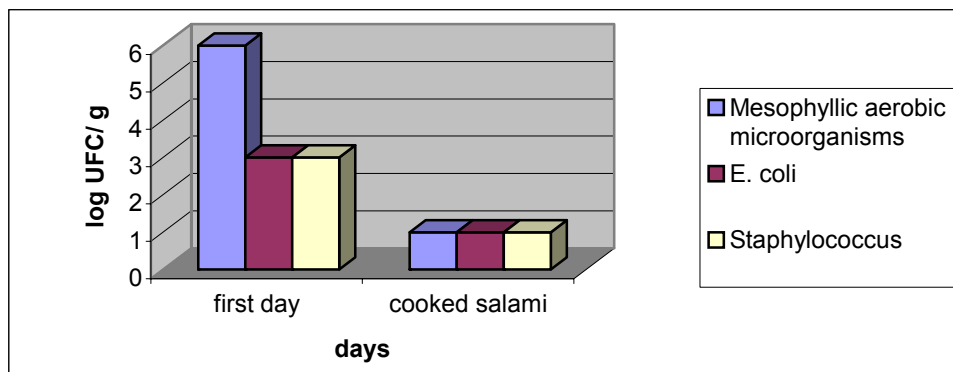


Figure 2 - Mesophilic aerobic microorganisms, *E. coli*, and coagulase positive *Staphylococcus* of a cooked salami treated with encapsulated citric acid.

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