Improvement of the food safety of low acid fermented sausages by enterocins A and B and high pressure

Anna JOFRE, Teresa AYMERICH and Margarita GARRIGA

aIRTA, Food Technology, Food Microbiology, Finca Camps i Armet, E-17121 Monells, Girona, Spain

Food Control
Volume 20, Issue 2, February 2009, Pages 179-184

Abstract

Fermented sausage technology involves a sequence of hurdles that appear along the ripening process. A wide variety of fermented sausages are manufactured worldwide based on the concept of reduction of pH and/or water activity. In low acid fermented sausages the absence of high acidification can be balanced by the application of additional hurdles such as bacteriocins and/or high hydrostatic pressure (HHP). The addition of enterocins A and B to raw-sausages spiked with 3 log CFU/g of Salmonella, Listeria monocytogenes and Staphylococcus aureus showed an immediate reduction in the counts of L. monocytogenes due to the enterocins, while Salmonella was more affected by the endogenous hurdles associated with the ripening process. The application of an HHP treatment of 400 MPa at the end of ripening produced an immediate reduction in the counts of Salmonella but not in L. monocytogenes or S. aureus. During storage of the low acid sausages (fuets) at room temperature and at 7 °C, counts of Salmonella and L. monocytogenes progressively decreased in all batches although the decrease was faster in the pressurized ones stored at room temperature. At the end of storage, Salmonella was <1 log CFU/g in all the batches but only the combination of enterocins and HHP could reduce the counts of L. monocytogenes to this level. Neither the ripening process, the enterocins nor the pressurization could control the levels of S. aureus.

Keywords: Enterocin; Food-borne pathogens; High pressure processing; Fermented sausages; Storage temperature