



FINAL REPORT

Avian Biosciences Grant Program

Award Recipient Haiqiang Chen and Rolf Joerger

Department Animal and Food Sciences

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Title Effect of Prior Growth Temperature on Pressure Resistance of *Listeria monocytogenes* in Ready-to-Eat Meats

Summary of Findings

Thirty strains of *Listeria monocytogenes* were screened for their pressure tolerance phenotype at 400 MPa for 2 min and 21°C. The strains exhibited reductions ranging from 1.9 to 7.1 log CFU/ml in tryptic soy broth with 6% yeast extract (TSBYE). The three most and the three least pressure-tolerant strains were further tested for their thermal resistance (based on their ability to survive at 55°C), acid tolerance (based on their ability to survive in acidified TSBYE of pH 2.0) and for their nisin sensitivity. No correlation between pressure tolerance and heat, acid or nisin resistances was found. Nucleotide sequence analysis of the *ctsR* region in these six strains demonstrated that this gene codes for a CtsR protein with identical predicted amino acid sequences. The sequence of the 200-bp region located immediately upstream of the *ctsR* start codon did exhibit features that could suggest differences in expression of *ctsR*, and it is therefore likely that differences in pressure tolerance are based on factors other than the stress gene regulator CtsR. The pressure sensitivity of a cocktail of the two most pressure-resistant strains and a cocktail of the two most-sensitive strains was investigated when the cocktails were inoculated into a real food system consisting of ground chicken meat. We demonstrated that the nature of the suspending substrate or the temperature did not change the order of pressure tolerance between the pressure-resistant and pressure-sensitive strains.

Publications Resulting From Research

Chen, H., Neetoo, H., Ye, M., and Joerger, R.D. 2008. Differences in pressure tolerance of *Listeria monocytogenes* strains are not correlated with other stress tolerances and are not based on differences in CtsR. Int. J. Food Micro. Submitted.

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