

Inhibition of *Brochothrix thermosphacta* on pork by lysozyme in combination with nisin

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Expansion of international markets for Alberta pork relies on the production of a safe, high quality product with a long and predictable storage life. One spoilage bacterium that grows both during vacuum packaged refrigerated storage and aerobic display is *Brochothrix thermosphacta*. This research was undertaken to evaluate the ability of lysozyme (Canadian Inovatech Inc.) in combination with Chrisin (Chr. Hansen A/S, Denmark) to control the growth of *B. thermosphacta* in broth systems, on pork cores and on naturally contaminated pork loins.

In a defined medium and in a sterile pork juice medium, low concentrations (250 µg/ml) of lysozyme and Chrisin alone, as well as mixtures, reduced numbers of *B. thermosphacta* to below detectable limits during 28 days incubation at 2°C. When cores of lean pork tissue were inoculated with 4.5 log cfu/cm² *B. thermosphacta* and were subsequently treated by dipping into lysozyme, Chrisin or mixtures at concentrations of 300 µg/g, no *B. thermosphacta* were recovered throughout 6 weeks of storage at 2°C. On fat tissue, reductions of at least 3 log cfu/cm² were maintained for 6 weeks.

Pork loins were treated with mixtures of lysozyme and Chrisin or water. Treatment with lysozyme and Chrisin reduced *B. thermosphacta* numbers in vacuum packaged product from 3.7 log cfu/cm² to 2.8 and 2.3 log cfu/cm² depending on the treatment. During retail display 600 µg/g of 3:1 lysozyme/Chrisin reduced *B. thermosphacta* numbers between 1 and 1.7 log cfu/cm² on steaks displayed in the retail case for 7 days.

Implication:

If pork is contaminated with *Brochothrix thermosphacta* the use of lysozyme in combination with Chrisin can reduce its numbers significantly during anoxic storage and subsequent retail display.