

## PORK SAFETY

**Title:** Competitive Inhibition of *Listeria monocytogenes* in Ready-to-Eat Meat Products, Phase II - NPB #01-114

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### ABSTRACT

Forty-nine strains of lactic acid bacteria (LAB), isolated from commercially available ready-to-eat (RTE) meat products, were screened for their ability to inhibit the growth of *Listeria monocytogenes* at refrigeration (5°C) temperatures on agar spot tests. The three most inhibitory strains were identified as *Pediococcus acidilactici*, *Lactobacillus casei*, and *Lactobacillus paracasei* by 16S rDNA sequence analysis. Their antilisterial activity was quantified in associative cultures in MRS broth at 5°C for 28 days, resulting in a pathogen reduction of 3.5 log<sub>10</sub> cycles compared to its initial level. A combined culture of these strains was added to frankfurters and cooked ham co-inoculated with *L. monocytogenes*, vacuum packaged and stored at 5°C for 28 days. Bacteriostatic activity was observed in cooked ham, whereas bactericidal activity was observed in frankfurters. Numbers of *L. monocytogenes* were 4.2 – 4.7 log<sub>10</sub> and 2.6 log<sub>10</sub> cycles lower than controls in frankfurters and cooked ham, respectively, after the 28-day refrigerated storage. In all cases, numbers of LAB increased by only 1 log<sub>10</sub> cycle. The strain identified as *P. acidilactici* was possibly a bacteriocin producer, while the antilisterial activity of the other two strains was due to production of organic acids. There was no significant difference (P>0.05) in the antilisterial activity detected in frankfurters by using the LAB strains individually or as combined cultures. Further studies over a 56-day period indicated that there was no impact on the quality of the product. This method represents a potential antilisterial intervention in RTE meats because it inhibited the growth of the pathogen at refrigeration temperatures without causing sensory changes.

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