Inhibition of *Listeria monocytogenes* on Ready-to-Eat Meats by Bacteriocins-producing Probiotic Strains

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**Abstract**

The U.S. Dept. of Agriculture (USDA) established a “zero tolerance” policy for *Listeria monocytogenes* in RTE meat products. Therefore, it is important to prevent the contamination of RTE meat products with this foodborne pathogen. A possible solution to this problem is the use of probiotics, live microorganisms that when administered in adequate amounts confer beneficial health effects to the host. This study aimed to examine the effectiveness of three bacteriocin-producing probiotic strains to prevent the growth of *L. monocytogenes* in natural and cured hams.

**Introduction**

*Listeria monocytogenes* is a human foodborne pathogen and the causing agent of a disease known as listeriosis. The vulnerable populations are immune compromised individuals, elderly adults, pregnant women, and neonates. Ready-to-eat meat products can become contaminated with *L. monocytogenes* due to the food contaminated with the pathogen. Cured and non-cured RTE cooked meats are a major safety concern because of their long shelf-life, additionally they are consumed without heating. *L. monocytogenes* can proliferate to a threatening level during refrigerated storage because of its ability to grow on the presence of curing salt. Among the interventions used to mitigate *L. monocytogenes* are thermal processing, addition of antimicrobial agents, spraying of essential oils, and irradiation. Probiotics could be used as a natural intervention to mitigate this human foodborne pathogen.

**Methods**

A total of 58 samples were evaluated to determine the antimicrobial potential of three different Lactic Acid Bacteria (LAB) strains (J19, L24-B and L25).

**Results**

From the 3 probiotics examined *Enterococcus faecium* J19 produced the most significant results in both hams until the enumeration of day 21.

**Conclusion**

- From the treatments used in this study, J19 and L25 were effective at reducing *L. monocytogenes* on broth types of ham.
- Higher pathogen reduction was achieved on samples of cured ham.
- On samples of natural ham, the pathogen has a increased growth compared to samples from cured ham this could due to the absence of antimicrobial agents as part of the ingredients (nitriles, diacettes, lactates, propionates, acetates and citrates).
- The results of this study showed that these new potential probiotics strains could be used as an intervention to reduce *L. monocytogenes* on RTE meat products.
- Further characterization is required to determine genomic specificities of these bacterial strains.