



Efficacy of Clean Label Antimicrobials Against *Listeria monocytogenes* in Deli-Style Turkey Formulated with Reduced Levels of Curing Agent

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Objectives

To determine the inhibitory properties of clean label antimicrobials against the outgrowth of *Listeria monocytogenes* in deli-style turkey breast formulated with less than 50 ppm ingoing sodium nitrite as a method to reduce curing agents in processed meat formulations.

Materials and Methods

Three deli-style turkey formulations were prepared and sliced using Good Manufacturing Practices, each contained ~1.3% salt and had ~76% moisture at pH of ~ 6.15. Treatments consisted of: (i) a control with 80 ppm ingoing sodium nitrite without antimicrobials, (ii) 20 ppm ingoing sodium nitrite + 2.0% DuraFresh UC Plus, and (iii) 40 ppm ingoing sodium nitrite + 2.0% DuraFresh UC Plus. Cooked slices were surface inoculated with 2.0 log CFU/g of a *L. monocytogenes* cocktail, vacuum packed, and stored for up to 13 wk at 4°C. Populations of *L. monocytogenes* were enumerated in triplicate by plating samples onto modified oxford agar (35°C, 48h) at weeks 0, 2, 4, 6, 8, 10, 13.

Results

The control formulation supported the growth of *L. monocytogenes* resulting in an increase of ~6.0 log CFU/g at 4 wk of storage at 4°C. Treatments formulated with low levels of ingoing sodium nitrite and adjunct clean label antimicrobials were effective in achieving varying levels of inhibition against the outgrowth of *L. monocytogenes*. Treatments formulated with 20 ppm ingoing sodium nitrite + 2.0% DuraFresh™ UC Plus allowed an increase in growth of 0.8 log CFU/g over 13 wk, while the treatments formulated with 40 ppm ingoing sodium nitrite + 2.0% DuraFresh™ UC Plus exhibited a insignificant increase in growth of 0.46 log CFU/g over 13 wk.

Conclusion

Reduced levels of ingoing sodium nitrite when combined with sufficient levels of a robust adjunct clean label antimicrobial successfully controlled the outgrowth *L. monocytogenes* in deli-style turkey breast formulation over 13 wk of storage at 4°C This study findings offers the processed meat industry a method to reduce the usage levels of curing agent without compromising food safety.