



Cook Yield Improvement and *Listeria monocytogenes* Control in RTE-Uncured Turkey Breast Using Vinegar and Citrus Flour

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Objectives

According to market research, a top trend is the consumer's demand for purity and simplicity, giving rise to natural labels. This means products have ingredient statements featuring simpler language, which is relatively easy for consumers to understand. Processors want to meet the consumer demand for natural products but face the challenge of formulating the natural products without sacrificing the food safety or product quality attributes. The objective of this study was to evaluate the antimicrobial efficacy of Verdad Avanta Y100, a product containing vinegar and citrus flour (VCF) on inhibition of *L. monocytogenes* growth potential in cooked RTE uncured turkey formulation for 120 d of storage at 4.4°C, as well as the assessment on cook yield and sensory attributes.

Materials and Methods

Turkey breast meat was injected at 33% pump level of brine solution containing water, sea salt, cane sugar and different levels of natural interventions: (A) Control, (B) 1.35% VCF, (C) 1.5% VCF (D) 1.0% Vinegar (Verdad Powder N6). Each treatment was macerated independently, tumbled at 2°C for 2 times for 2 h each with 30 min rest in between. Two replicates for each treatment were vacuum packed, placed in a steel mold and cooked in a steam cabinet till an internal temperature of 72°C was reached.

The treatments were divided independently for sensory and microbiological assessment and incubated at 4.4°C. The inoculated samples were enumerated for *L. monocytogenes* (in duplicate), at 12 regular intervals for 120 d of incubation, using selective Palcam media. In parallel non-inoculated samples were assessed for cook yield and sensory. Cook yields of the different treatments were calculated by the weight after cooking divided by the ini-

tial weight of the turkey breast expressed as a percentage. Sensory evaluations of the different formulations were done by a trained panel on basic taste attributes. Proximate analyses were performed for all the treatments.

Results

The use of treatment 1.35, 1.5% VCF and 1.0% Vinegar showed significant ($p < 0.05$) control in outgrowth of *L. monocytogenes* compared to the control treatment. The 2 log outgrowth for *L. monocytogenes* was reached in 15 d for control treatment and more than 90 d for the treatment with 1.35% VCF. For the other 2 treatments, an inhibition (< 1 log outgrowth) of *L. monocytogenes* was observed during 120 d of incubation.

Using VCF ingredient over the treatments control and vinegar resulted in an improved cooked yield. An increase of 3 to 4% cook yield was observed compared to the control treatment and an increase of 1.5 to 2.5% cook yield over the Vinegar treatment. There were no differences between treatments with VCF and Vinegar on the basic taste attributes.

Conclusion

This research substantiates the antimicrobial efficacy of vinegar and citrus flour (VCF) in RTE uncured turkey breast to control *L. monocytogenes* outgrowth as well as an improved cook yield and provides the industry with an effective natural ingredient multifunctional solution.

Treatment details	a_w	pH	Moisture	Cook yield
Control	0.979	6.17	75.6%	91.5%
1.35% VCF	0.976	6.17	75.6%	94.4%
1.5% VCF	0.975	6.18	75.2%	95.4%
1.0% Vinegar	0.975	6.08	75.2%	93.0%