



Utilization of Phosphate Alternatives to Produce Chunked and Formed Deli Ham

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Objectives

The objective of this study was to determine the efficacy of replacing phosphate with a natural alternative in chunked and formed deli ham.

Materials and Methods

Boneless biceps femoris muscles were chunked into 2.54-cm cubes. Each treatment formulation (6 kg) consisted of approximately 77% pork (85% cubed meat and 15% finely chopped trim to improve protein binding), 20% water, 1.8% salt, 0.9% dextrose, 120 ppm sodium nitrite, 450 ppm sodium erythorbate and the following treatment effects: positive control (0.4% sodium tripolyphosphate, STP), negative control (no phosphate, NP), a 1.3% Fiber Dry Vinegar (FDV) blend, and a 1.1% whey protein concentrate blend (WPC). The ham formulations were vacuum tumbled (25 mm/hg of mercury) for four 20 min intervals with 10 min rest periods in-between. After the rest period of the third interval, the trim was added and the formulation was vacuum tumbled for the final 20 min. The contents of the tumbler were then stuffed into cellulose casings, tipper tied, heat processed in a smokehouse to an internal temperature of 74 C, and sliced into 1.27 cm slices for color and protein bind analysis. Consumer acceptability testing ($n = 60$ panelists) was also conducted using a 9-point hedonic scale. A completely randomized design with 2 replications was utilized to evaluate treatment ef-

fects. When significant differences occurred ($P < 0.05$) among treatments, Fisher's Protected Least Significance Test was utilized to separate treatment means

Results

The STP treatment had less cooking loss than all other treatments ($P < 0.05$) at 9.3%. The cooking loss for the WPC treatment was less ($P < 0.05$) than that of the NP treatment % but was not different ($P > 0.05$) from the FDV treatment. The STP treatment had greater protein bind ($P < 0.05$) than all other treatments. In addition, the FDV treatment had greater protein bind than the WPC and NP treatments. On average, no differences ($P < 0.05$) existed between treatments with respect to consumer acceptability. Cluster analysis was conducted to determine if any variability could be determined among treatments since all hams were liked. Results indicated that 88% of consumers rated the STP treatment like moderately or greater, 73% of the panelists liked the NP treatment moderately or greater, and 85% of panelists liked the WPC and fiber treatments at least like moderately.

Conclusion

Application of WPC or FDV may help meat processors meet current clean label trends if the decrease in cooking yields and firmness of texture was acceptable to processors and or consumers.