



## Effect of Organic Acid Applications on Organoleptic Properties of Ground Pork

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### Objectives

The objective of this study was to determine the impact of intervention treatments on the organoleptic properties of ground pork during shelf-life.

### Materials and Methods

Pork trimmings were divided into 22 kg batches for each individual treatment ( $n = 4$  batches). Treatments included control (no intervention), PAA+Titon [Sulfuric acid and sodium sulfate (pH 1.3) combined with peracetic acid (350 ppm)], PAA+Acetic [Peracetic acid (400 ppm) with 2% acetic acid], and LA [Lactic acid (3%)]. After application of each designated treatment, trimmings were ground (coarse and then fine ground) and packaged into 454-g vacuum packaged rollstock packaging. Each package was then stored in dark storage for 0, 7, 14, 21, and 28 d at 2–4°C ( $n = 8$  packages per treatment and time combination). Once each package had reached their designated storage length, packages were removed from storage for sampling. Shelf-life measurements taken included TBARS, raw product odor acceptability, aerobic plate count and psychrotrophic plate count bacterial enumeration. All bacterial enumeration data were converted into  $\log_{10}$  for statistical analysis, and the PROC MIXED procedure of SAS was used to determine differences between least squared means (SAS Inst. Inc., Version 9.4, Cary, NC). Odor acceptability was determined using a PROC FREQ.

### Results

For aerobic plate counts (APC), in the ground pork product, a treatment by day interaction occurred ( $P = 0.007$ ). Psychrotrophic bacterial counts did not differ by treatment or sampling day ( $P > 0.05$ ). PAA+Titon and LA had decreased lipid oxidation compared to PAA+Acetic and control pork samples over the 28 d of storage. Lipid oxidation didn't change for all 4 treatments on Days 0, 14, 21, and 28; however, there was an unexplainable spike in lipid oxidation for samples on Day 7. Overall pork odor acceptability differed by storage length ( $P = 0.02$ ), but not by treatment ( $P > 0.05$ ). Overall Pork odor acceptability decreased as storage length increased. Acidic off-odor differed by storage length ( $P = 0.002$ ), but not by treatment ( $P > 0.05$ ). Acidic off-odor increased as storage length increased. Overall oxidation off-odor did not differ by treatment or aging ( $P > 0.05$ ). Sweaty off-odor development differed by aging day ( $P = 0.01$ ) but not by treatment ( $P > 0.05$ ). Sweaty off-odor reached its highest point within Day 14 and 21 and then decreased. An increasing sour off-odor development differed by ground pork storage length ( $P = 0.001$ ), but not by treatment ( $P > 0.05$ ).

### Conclusion

There were no dramatic negative organoleptic changes to pork trim when treated with selected organic acid interventions prior to grinding, meanwhile there is organoleptic changes by storage length.