

## ANIMAL SCIENCE

**Title:** Novel Approach to Controlling Water-Holding Capacity and pH Decline in Pork: The Role of Dietary Lipoic Acid in Calcium Regulation and Glycogen Storage. (#01-095)

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### I. Abstract

One of the most significant quality problems facing the industry is a lack of consistency of important quality attributes including water-holding capacity and product tenderness. One mechanism that may affect pork quality is oxidation of proteins that maintain calcium balance in muscle cells. Increasing the level of an antioxidant like lipoic acid could aid in preventing oxidation of these proteins and maintaining relatively low levels of free calcium for a longer period of time postmortem thus slowing pH decline and improving water-holding capacity. Therefore, it was the objective of this project to establish the role of oxidation in regulating the development of water holding capacity and tenderness in pork. The antioxidant compound lipoic acid was fed to market pigs in an attempt to create differences in oxidation. In this study the doses and delivery system used did not show a difference in quality that could be attributed to lipoic acid treatment. However, this study did indicate the extent of oxidation occurring in meat early postmortem might be related to ultimate pH values and tenderness of the product. Products that had a relatively high level of oxidation had lower ultimate pH values. This study indicates that oxidation that occurs in early postmortem meat can have a significant effect on quality attributes that are influenced by pH. Besides providing this basic information, this study points to the continued need to examine antioxidant compounds that lead to novel solutions (such as modifying finishing diet rations) that can be easily implemented by the producer to improve pork quality.

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