

### **3A-110: The influence of rate of dietary vitamin E supplementation on the shelf life and retail display quality of Australian pork.**

#### **Project Leader**

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#### **Project Participants**

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#### **Aims and Objectives**

To investigate the impact of increasing levels of muscle vitamin E and extended storage time on several measures of shelf life in pork *M. longissimus dorsi*.

The experimental hypothesis - that Vitamin E will stabilize the shelf life of pork under extended storage periods (14 and 28 days), thus allowing lengthened storage periods.

#### **Key Findings**

Increased muscle vitamin E concentrations improved the shelf life of pork loin as measured by TBARS, but in the non-stored product only. Storage past 14 days resulted in a non-significant trend of improved TBARS concentrations with increased vitamin E concentrations. Although this trend was non-significant, adding vitamin E through supplementation seemed to keep the product from reaching the TBARS spoilage threshold even in the long aged product after 6 days of retail display.

Increasing levels of intramuscular fat in the muscle resulted in a large increase in the development of TBARS in the long stored product only and thus resulted in a shorter shelf life and reaching the spoilage threshold for TBARS after 4 days of display (28 day stored) at the high end of the intramuscular fat range.

There was an aging benefit to improving tenderness (37% decrease in shear force) from 0 to 14 days. This is an improvement from recent pork CRC reports. Further investigation is warranted.

#### **Application to Industry**

It is suggested that vitamin E improves shelf life under a threshold mechanism, as to where a level must be reached and no further benefit is observed. In the current experiment muscle vitamin E concentrations were relatively high even in the lowest supplementation level, thus it is suggested that the lack of impact of vitamin E in the long stored product was due to the presence of sufficient vitamin E concentrations. Vitamin E did not seem to improve colour measurements and as a result, it is suggested that colour measurements are not a beneficial measurement for the shelf life of pork.

However, the impact of IMF, which at increased concentrations has eating quality benefits, is an important issue for the pork industry, especially considering the size of the effect and that the level of IMF in this experiment was low. Thus if the industry is to increase intramuscular fat to improve eating quality and consistency more investigation is required between the interactions of muscle vitamin E and intramuscular fat during long stored pork product.