

Project Title: **Factors Contributing to the Incidence of the Dark Cutting Condition in Beef Carcasses & Management Strategies to Prevent Reductions in Value Due to the Occurrence of Dark Cutter Litters**

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Laymen's Summary

The Dark Cutter Beef (DCB) condition is the result of reduced glycogen (sugar) levels in the beef muscle. These reduced levels inhibit the normal post-mortem pH decline in the muscle because lactic acid production decreases. Whereas the pH of normal post-mortem beef muscle is 5.5 to 5.7, DCB meat has an abnormally high post-mortem pH of >6.0. The high pH inhibits oxygen uptake in the muscle tissue and is thus responsible for the dark, undesirable appearance of the beef, which is unappealing to the consumer and discounted at the packing plant.

The objective of this study was to use data collected at commercial feedlot and slaughter plants to determine the biological and management factors that contribute to the incidence of dark cutting in beef carcasses. This study also evaluated the possible developmental conditions that might arise through modern production practices and affect beef cattle by increasing the likelihood of dark cutters. Data in this study were compiled from September 1996 through January 1998. A total of 272,936 cattle in 2,082 pens were evaluated and 4,460 dark cutters (1.6%) were found.

Factors contributing to the incidence of DCB included carrying of cattle overnight at the slaughter plant, breed type, slaughter plant gender, gender mixing of cattle, feedlot mixing of cattle and fluctuating weather conditions, such as excessive heat and extreme cold. Carrying of cattle overnight at the slaughter plant significantly increased the percent of dark cutters from 1.0 to 2.7%. The study also showed that cattle need time to adjust to changing weather conditions. The highest percentage (1.9%) of dark cutters occurred when temperature ranges exceeded 10 to 15 degrees Celsius. In turn, supplements that increase blood glucose levels (i.e. an electrolyte solution) should be added to feed or water during stressful climatic periods to help reduce DCB. Implementation of management practices that minimize an animal's overall stress level can be helpful in reducing the incidence of DCB. For example, stress from transport, handling, fear, and withholding feed and water (especially in times of low temperatures and precipitation) are factors that increase the incidence of dark cutting beef. Another way to decrease the herd's stress level, and possibly the incidence of DCB, is to sort cattle by gender. The study states that good management during marketing and immediately before slaughter is crucial to minimizing the incidence of DCB.

