

Project Title: Using Vitamin D₃ to Improve Beef Tenderness in Three Different Biological Types

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Layman's Summary:

The improvement of beef tenderness is related to the degradation of myofibrillar proteins due to the release of the protease μ -calpain by calcium. The relationship of Calcium and Vitamin D₃ allows for the theory that the oral supplementation of Vitamin D₃ will increase the calcium content in muscles resulting in an increase in the protease μ -calpain resulting in increased tenderness. A study to investigate the effect of feeding Vitamin D₃ prior to cattle harvest on tenderness of muscles from different biological types of cattle was conducted at Texas Tech University. *Bos Taurus-continental*, *Bos Taurus-english* and *Bos Indicus feedlot* steers were fed four different levels of Vitamin D₃ for eight consecutive days. Feedlot performance data-carcass data were collected and shear force analysis was conducted at days 3, 7,10,14 and 21. Biological type of cattle did not affect Vitamin D₃ treatment for any carcass, feedlot performance or tenderness traits measured. In turn, feeding Vitamin D₃ before harvest will affect all cattle in a similar fashion. Supplementing steers with ½ million IU's/head/day for eight consecutive days improved the shear force in the longissimus lumborum and semimembranosus steaks by affecting the calcium and μ -calpain, while having only a minor effect on tissue Vitamin D concentrations, and no adverse effects on feedlot performance.

