

Transport Stress and Meat Quality in Veal Cattle

Transportation can be one of the most stressful times in the animal's life and can create big economic and animal welfare issues. Transportation involves handling, loading, unloading, comingling, new environments, exposure to extreme temperatures, confinement, and possible food and water deprivation. During this time livestock such as finished veal cattle can lose weight which alters muscle chemistry and can negatively affect meat quality.

All of the stressors associated with transport can negatively affect animal welfare, but also impact the finished product. Food and water deprivation during transport can also impact carcass quality. Research with beef cattle identified that the weight loss attributed to transport was that of gut contents, urine, and tissue shrink. It is estimated that cattle lose 0.75 per cent of their body weight per day without food or water¹. Calves under six months of age can lose between six and ten per cent of their body weight². This loss tends to occur most rapidly in the first 12 hours of transport. The amount of tissue shrink however, depends on the temperature and the duration of transport. Cattle that are stressed prior to slaughter due to long transport times and dehydration had tougher darker coloured meat, also known as dark cutters, than cattle transported shorter times³.

Dark cutters occur due to a depletion of muscle energy (glycogen) reserves. When glycogen reserves are depleted in the muscle tissue of cattle that are stressed, it raises the pH which leads to dark cutting. While there are a variety of factors that can contribute to dark cutting, stress and increased activity levels due to comingling, handling, adverse weather, or overcrowding are all risk factors for dark cutting. Dark cutting can also have significant economic implications with a loss of up to \$300 per head.

There are a variety of ways to reduce the effects of transport stress on animal welfare and meat quality. Ensuring all cattle are handled calmly while loading and unloading and ensuring adequate time and patience while handling cattle can both have a big impact on reducing stress levels. Cattle should be loaded in small groups of five or less and a slow walk is the most effective. Overcrowding can be another



source of stress for cattle during transport. Overcrowded loads may scramble for footing and some may be forced to lie down and be unable to rise. Increasing lairage (the place where cattle are temporarily held while awaiting slaughter) time once cattle arrive at the processing plant can help improve muscle chemistry and can help reduce the effects of



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transport stress on meat tenderness³. Long hours of transportation without sufficient lairage also contributed to dark cutting.

Another approach to reduce the negative effects of transport stress is providing cattle with electrolytes. When an animal is stressed their electrolytes are unbalanced. Providing finished veal cattle with electrolytes helps prevent dehydration and maintain muscle chemistry, which reduces tissue shrink and the risk of dark cutting. While electrolytes can be provided before or after transport, they have the biggest impact when provided prior to transport.

Electrolytes, however, are not necessarily better than water at preventing dehydration⁴. While cattle are provided with water before and after transport, they do not necessarily drink during those times due to an unfamiliar environment and unfamiliar animals around them. Adding electrolytes to the water is thought to improve palatability so the cattle drink more prior to loading⁴. There are a variety of electrolyte solutions available commercially that are designed to combat carcass shrink and dehydration in cattle. Commercially available electrolytes are balanced with sodium, potassium, chloride, and often contain acetate or dextrose to provide energy. If you are currently providing electrolytes to your finished cattle prior to transport we'd like to hear from you, please contact Veal Farmers of Ontario at 519-824-2942 or info@livestockalliance.ca.

Reducing stressors associated with transportation is very important to enhancing animal welfare and carcass quality. There are a variety of methods to help reduce transport stress. For more information about safe handling and transportation of veal cattle, watch the transportation and handling video on the Veal Farmers of Ontario's YouTube channel <https://www.youtube.com/user/OntarioVeal>. ■



References

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