



We support cattle farmers in their commitment to continue finding better ways to provide quality beef for you and your family. Zilmax[®] (zilpaterol hydrochloride) is a Food and Drug Administration (FDA)-approved feed supplement that improves cattle's natural ability to convert feed into more lean beef^{1,2,3} that is flavorful, tender and juicy.^{4,5}

Fatigued Cattle Syndrome

Using science to guide decisions

In the summer of 2013, questions were raised about the well-being of cattle fed Zilmax in a finishing ration and then transported. Subsequently, five veterinary researchers initiated an effort to study the circumstances and published their findings in the July 2015 *Journal of the American Veterinary Medical Association*.⁶ The researchers concluded the cattle in question were impacted by a novel fatigue syndrome.

The researchers found cattle subjected to multiple stress factors including heat stress, higher body weights, loading and unloading, time spent standing, available shade, water cooling, pen surfaces, shipping, etc., could show signs of distress.⁶ Symptoms included labored breathing, reluctance to move, lameness, a stiff gait and lying down despite showing no signs of injury or disease.⁶ Specific indicators for stress also were identified from blood samples drawn from the animals. The researchers identified this distress in both cattle fed beta-adrenergic agonists and cattle not fed beta-adrenergic agonists.

These symptoms were similar to those identified in pigs under comparable circumstances. Swine researchers labeled the condition Fatigued Pig Syndrome, and the researchers studying the distressed cattle suggest the label of Fatigued Cattle Syndrome (FCS) to describe the symptoms and factors leading to them.

Management and prevention

Low-stress handling may be one management practice to help prevent FCS. In their study, the researchers found cattle handled with low-stress methods showed no signs of fatigue.⁶ The authors emphasized this is an initial effort to identify the factors associated with FCS. They also encouraged further research to more fully understand the changes in cattle leading to FCS and to develop protocols that will minimize or eliminate FCS.

Committed to continuous improvement

At Merck Animal Health, we are dedicated to preserving and improving the health, well-being and natural growth potential of animals. We support cattle farmers with science-based solutions and ongoing research that enables continuous improvement in all aspects of an animal's life.

"I think we've shown that we can create it (Fatigued Cattle Syndrome) in cattle that aren't on a beta agonist. I think we've shown that we can prevent it in cattle that are fed a beta agonist."

Dan Thomson, DVM, Ph.D.,

Jones Professor of Epidemiology
and Production Medicine

Kansas State University



References

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Merck Animal Health

For more information, go to www.zimax.com.

IMPORTANT SAFETY INFORMATION

Zimax has a withdrawal period 3 days prior to slaughter. Not for use in animals intended for breeding. Do not allow horses or other equines access to feed containing zilpaterol. Do not use in veal calves. Not to be fed to cattle in excess of 90 mg zilpaterol/head/day in complete feed. If pen consumption of complete feed exceeds 26.5 lb/head/day (90% dry matter basis), zilpaterol should not be fed in complete feed. For complete safety information, refer to product label and Zimax website.

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(zilpaterol hydrochloride 48%)