



We support cattle farmers in their commitment to continue finding better ways to provide quality beef for you and your family. Zimax® (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}

Animal Safety and Well-being

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.

FDA approved as safe for cattle

Before any animal health product is approved for use, it must be proven safe and effective by the FDA through comprehensive and rigorous testing. Zimax was approved by the FDA¹ in 2006, and by other international regulatory authorities prior to that approval. Cattle farmers value approval of this feed supplement because it helps cattle improve their natural ability to convert feed into lean beef^{1,2,3} at a time when they become less efficient at metabolizing their feed, and typically gain excess fat.

Extensive animal safety and well-being research

Since 2006, more than 65 research studies and observations of 182,555 head of cattle fed Zimax were conducted. All post-approval research further corroborates the FDA approval that Zimax is safe and effective, when used according to the product label directions and in conjunction with sound animal husbandry practices.^{1,6-16}

In August 2013, a question was raised about the product's impact on animal well-being, specifically mobility. Merck Animal Health immediately initiated additional third-party research and surveillance actions while voluntarily suspending product sales until this question could be addressed. The additional research initiatives included:

- **Mobility surveillance data collected** by third-party trained evaluators who observed and scored the mobility of more than 60,000 head of cattle in 33 feedyards and seven plants.
- **Independent research teams from the United States Department of Agriculture and seven universities conducted comprehensive studies** to evaluate cattle fed Zimax against numerous parameters of cattle safety and well-being, including animal mobility, behavior, stress and physiological indicators.

Research conclusions: Zimax has no impact on animal well-being

The independent research teams concluded Zimax has no negative impact on the health and well-being of cattle, including (see table on right):^{1,6-16}

- ✓ Mobility, lameness and movement
- ✓ Behavior or temperament
- ✓ Pain and stress
- ✓ Physiology (e.g., heart rate, body temperature, blood chemistry and pathology of organs)

And, the specific circumstances leading to the August 2013 question were reviewed, with researchers concluding Zimax had no impact on the animal well-being issue.¹⁷ Researchers identified it as a multi-factorial incident known as Fatigued Cattle Syndrome, which can be managed with proper animal nutrition and low-stress handling.

Since 1985, Merck Animal Health has conducted extensive animal safety and well-being research with Zimax, far more than required by the FDA, making Zimax one of the most researched animal health products.

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

"To summarize the big picture of this study, I would conclude that zilpaterol hydrochloride did not have an impact on mobility, did not have an impact on physiology and didn't severely alter the cattle's disposition."

Ryan Rathmann, Ph.D., Assistant Professor,
John W. and Doris Jones Professorship,
Texas Tech University

	Mobility/ Behavior	Stress	Physiology
			
			
			
			
			
			
			
			

Committed to the health and well-being of animals

Here are a few additional examples of our commitment to find ways to continually improve the health, well-being and natural growth potential of animals:

- **Four-point Mobility Scoring System.** One indicator of cattle health is how well they move. To help the industry better understand cattle mobility, Merck Animal Health worked with university and industry experts to develop a Four-point Mobility Scoring System. This new system was recently published by the North American Meat Institute for industry use.
- **Creating Connections.** This training and education effort helps cattle farmers better understand cattle behavior and offers real-world positive cattle handling practices, knowledge and resources. Through a better understanding of animal behavior and handling practices, farmers can provide care that results in reduced animal stress, stronger immune responses and healthier animals. Learn more at <http://www.merck-animal-health-usa.com/company/CreatingConnections.aspx>.
- **Responsible Beef.** Our Responsible Beef initiative seeks to help cattle farmers find innovations and improvements in all areas – cattle, land, communities and business. For example, practicing responsible beef production, today's cattle farmers are feeding a larger population – with the same number of cattle as five decades ago – while reducing their carbon footprint. The Responsible Beef platform provides an opportunity to celebrate progress and share stories with consumers of how cattle farmers are making continuous improvement in providing high-quality beef that is raised responsibly. Come see for yourself at <https://responsiblebeef.com/stories>.

References

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- ⁹ Merck Animal Health, Research on file, Report #2014-7: The effects of technology use in feedlot production systems on the behavior and mobility of finishing steers.
- ¹⁰ Merck Animal Health, Research on file, Report #2014-7: The effects of technology use in feedlot production systems on heat stress of finishing steers.
- ¹¹ Merck Animal Health, Research on file, Report #2014-7: The effects of technology use in feedlot production systems on health parameters of finishing steers.
- ¹² Merck Animal Health, Research on file, Report #2014-9: The effects of Zilmax on the general well-being of feedlot cattle.
- ¹³ Merck Animal Health, Research on file, Report #2014-9: MRI provides objective diagnosis of hoof health in feedlot cattle supplemented with Zilmax.
- ¹⁴ Merck Animal Health, Research on file, Report #2014-9: The effects of Zilmax on various physiological indicators of thermal regulation in black-hided feedlot steers and heifers during moderate heat stress.
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IMPORTANT SAFETY INFORMATION

Zilmax 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 Zilmax website.



“The best way to evaluate mobility is to have a simple scoring system that people can easily learn, and I really like a four-point scoring system. You manage the things that you measure, and when you manage it you’re going to prevent problems from happening.”

Temple Grandin, Ph.D.,
Professor of Animal Science,
Colorado State University

Four-point Mobility Scoring System

1	Normal. Walks easily with no apparent lameness or change in gait.
2	Keeps up with normal cattle when the group is walking; will exhibit one or more of the following: stiffness, shortness of stride or slight limp.
3	Lags behind normal cattle when the group is walking; will exhibit one or more of the following: obvious stiffness, difficulty taking steps, obvious limp or exhibiting obvious discomfort.
4	Extremely reluctant to move even when encouraged by a handler.