



Wind power

Plenty of myths and facts still exist about the bronchodilator clenbuterol

CLENBUTEROL WAS considered a miracle drug outside the United States for horses with lower-airway problems long before its approval by the United States Food and Drug Administration in 1998.

With a proven history of being a safe, convenient, effective drug, Boehringer Ingelheim Vetmedica's Ventipulmin Syrup was a long-anticipated addition to the equine veterinarian's armamentarium. Ventipulmin is the only clenbuterol product in the U.S. that is FDA-approved for equine use.

Misconceptions about the drug had plagued clenbuterol through the regulatory process, slowing it to a

disease because of how they are housed. Constant exposure to airborne particulates and irritants from hay, straw, shavings, and dusty shedrows, coupled with inadequate stall ventilation, creates an asthma-like condition that causes the horse's bronchioles (small airway tubes in the lungs) to become inflamed and constricted and to produce increased mucus.

Horses are affected in differing degrees, from mild airway obstruction that may go unnoticed to severe obstruction that grossly reduces performance.

"The horse that isn't competing or is competing at a lower level can deal with a fair amount

trachea, where it is swallowed or coughed out.

All this improves performance by allowing the horse's lungs to function normally again. Clenbuterol cannot artificially enhance performance. Horses without airway disease whose lungs already are functioning normally do not benefit from clenbuterol.

"So many of our racehorses suffer from some degree of these airway problems that putting a horse on it often had very dramatic results and therefore made it look as though its performance was being enhanced, when it was only being returned to whatever the normal should have been," Stenbom said.

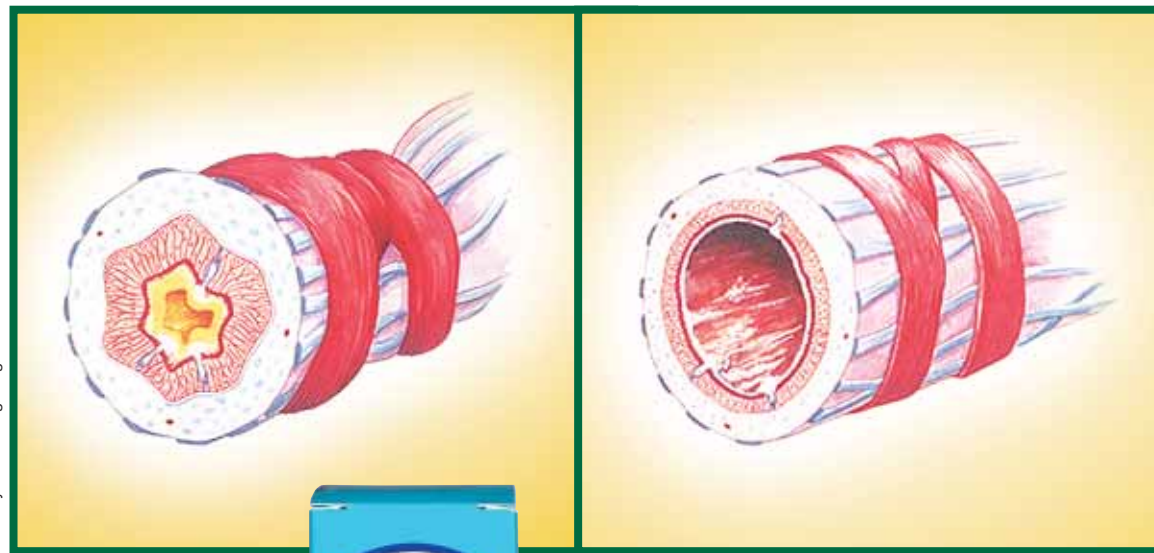
issue," Stenbom said. "To get that type of effect out of clenbuterol takes very high doses for very long periods of time, and it is just not the economical way to do it."

Racetrack use

Clenbuterol is allowed as a therapeutic drug for training purposes only. Any presence of clenbuterol beyond

allowable limits in a race-day test constitutes a violation. The Association of Racing Commissioners International lists clenbuterol among Class-3 substances—drugs that may or may not have generally accepted medical use in the racing horse, but the pharmacology of which suggests

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Courtesy of Boehringer Ingelheim Vetmedica

cautious crawl. In Europe, much larger doses of clenbuterol hydrochloride than the therapeutic dose contained in Ventipulmin had been used to bulk up cattle for slaughter, making officials concerned it might find its way illegally into the American food supply. Acute clenbuterol poisoning from tainted beef had been reported in France, Italy, and Spain, where the largest single incident sickened 113 people in 1992.

Because Ventipulmin contains only 72.5 micrograms of clenbuterol hydrochloride per milliliter, fears of illegal use of Ventipulmin as a growth enhancer in cattle became a nonissue because it would be too costly. But the notion that the drug could bulk up horses, similar to an anabolic steroid, persists to this day. This is just one of the myths about clenbuterol use in equine athletes. Another myth is that it can be used to improve the performance of every horse, not just ones suffering from lower-airway obstruction.

Breathing easier

Most racehorses are thought to have some form of lower-airway

of this, and they never show anything outwardly," said Bob Stenbom, D.V.M., Boehringer's manager of equine professional services. "When you are talking about racing horses, which go through full aerobic exertion and beyond, any interference with the normal airway will interfere with their ability to perform to their optimum."

In affected horses, clenbuterol:

- Dilates the bronchioles to their normal, relaxed state, which enables better airflow;
- Reduces inflammation within the airway;
- Thins mucus; and
- Unencumbers the tiny hairs within the airway called cilia so they can do their job of transporting mucus upward and out of the

Boehringer Ingelheim Vetmedica's Ventipulmin Syrup, the only FDA-approved clenbuterol product for use on horses in the U.S., has a proven history of being safe, convenient, and effective. The image above shows a horse's airway before and after the administration of clenbuterol, a bronchodilator used for respiratory ailments that is considered a Class 3 substance by the Association of Racing Commissioners International



Not a steroid

Because clenbuterol has been used to bulk up cattle, some horse men and a few regulatory officials erroneously conclude that the drug is similar to an anabolic steroid.

"Steroids are an entirely different chemical and pharmacological class of drugs," Stenbom said.

Stenbom said that anabolic steroids increase protein synthesis within the muscle, which increases muscle mass and physical strength. Clenbuterol causes a repartitioning of muscle fibers by directing nutrients away from fat tissue and toward muscle tissue, which promotes lean muscle.

"At normal, reasonable doses, the effects [of Ventipulmin] that some people describe as an 'anabolic-steroid effect' are not a significant

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less potential to affect performance than drugs in Class 2 (erythropoietin, ketamine, and reserpine, among others).

The RCI-recommended penalties for a clenbuterol violation range from a 15-day suspension and \$500 fine for a first offense without mitigating circumstances to a one-year suspension and a fine that is the greater of \$5,000 or 5% of the purse for a third offense with aggravating factors. All violations require disqualification of the horse and

forfeiture of the purse.

Suggested withdrawal times for clenbuterol to avoid a violation vary from jurisdiction to jurisdiction and range from 24 hours (Louisiana and Oklahoma) to 14 days (Oregon). Because actual clearance time depends on the individual horse's physiology, veterinarians urge trainers to allow ample time for withdrawal to avoid a bad test.

"I always want to be extra careful," said veteran racetrack practitioner Mark Cheney, D.V.M., of Lexington. "Personally, I always recommend one day more [than the

guidelines]. It's an educated guess, really."

Cheney advised trainers to ask their stable veterinarian or the racing commission veterinarian where they intend to race about that jurisdiction's recommended withdrawal period before entering a horse.

Stenbom added that some horsemen believe they can outwit regulatory testing by administering clenbuterol on race day via the trachea instead of orally. He said this is a useless practice because the drug is ineffective when given via the trachea.

Other uses

In training, long-term therapy with clenbuterol, along with management practices to improve air quality in the stable, helps the horse maintain a healthy respiratory system while it prepares for a race. But this is not its only use. Because of its ability to dilate the bronchioles and clear the lungs of mucus, irritants, and other debris, clenbuterol often is used in conjunction with antibiotic therapy for respiratory infections and after a bleeding episode to help evacuate blood from the lungs and help avert

Bootleg clenbuterol

ANY equine clenbuterol product other than Ventipulmin Syrup, manufactured by Boehringer Ingelheim Vetmedica, is an illegal and unregulated substance that could endanger the horse and cause a drug violation.

In 2007, several horses in Louisiana became ill and two were euthanized after they received massive overdoses of clenbuterol hydrochloride contained in a knockoff version of Ventipulmin that was 70 times the strength of the Boehringer product.

Because the clenbuterol content of illegally compounded Ventipulmin is not consistent, individual batches even from the same compounder may be weaker and ineffective or contain a higher concentration of clenbuterol, which could trigger a bad test or endanger the horse.

—Denise Steffanus

Boehringer Ingelheim

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*Not recently described by experts as horses, recurrent airway obstruction (RAO) (inflammatory airway disease).



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Stamm J, Uzal J, Unhail H, et al. Respiratory disease in thoroughbred horses in training: the relationship between inflammation, bronchial hyperresponsiveness, and airway obstruction. *Veterinary Record* 2008; 163: 308-313. Ventipulmin[®] is a registered trademark of Boehringer Ingelheim Vetmedica GmbH. ©2009 Boehringer Ingelheim Vetmedica, Inc. All rights reserved. BI 412 209

infection while they heal.

"I also use it as a preventive with bleeders," said John Piehowicz, D.V.M., who practices on the Midwest racing circuit, "especially under these dry and dusty conditions, to try to open the lungs and allow them to get as much oxygen as possible and as much transfer of waste products as possible by opening the alveoli [tiny air sacs in the lungs]."

"I work for one trainer who is very, very successful," Cheney said. "He scopes his horses after every single breeze to keep an eye on them, and he has the fewest bleeders I have ever seen in my whole career. And they're on clenbuterol every day and a product called EPIC [DAILY from Bioniche Animal Health USA], a powerful immune stimulator made of egg yolks. The combination of the two has been very beneficial."

On the farm, clenbuterol is the drug of choice for treating horses with chronic obstructive pulmonary disease, or heaves.

Personally, Stenbom said he would like to see regulatory bodies approve clenbuterol as a declared race-day medication, much like bleeder medication, where the horse must race on it every time and its use (or discontinued use) is regulated and made public to bettors.

"In a nutshell, I would love to see [clenbuterol] get that classification," he said, "but there is so much misunderstanding about the drug that it could be a pipe dream. It's unfortunate, because this is a very beneficial drug for a lot of horses." *

Denise Steffanus is a contributing editor of THOROUGHBRED TIMES who writes frequently on veterinary and farm management topics.