

Ionophore Poisoning

Major Known Incident: National Incident in Elk City, Oklahoma

Name: Ionophore (Brand Names: Monensin, Rumensin, Bovatec, Cattlyst, and others)

Type: Toxic Feed Ingredient for Equids (Horses, Donkeys, Mules)

For more information: <https://extension.arizona.edu/pubs/ionophore-toxicity-horses>

Affected Livestock: More than 70 horses have died so far at Beutler Ranch in Elk City, Oklahoma. Ionophore toxicity is not a new issue, but it has garnered national attention due to the number and value of the horses affected.

Transmission: Horses and other equids are usually exposed to ionophores by gaining access to medicated feed containing ionophores intended for cattle, goats, or poultry. In this case, monensin was accidentally mixed into feed intended to be fed to horses at the mill due to human error and a possible sensor malfunction.

Signs of Ionophore Toxicity: Sudden death, Exercise intolerance, Feed refusal, Colic, Increased heart/respiratory distress, Hypotensive shock. Often multiple horses eating the same diet will be affected.

Prognosis: Horses are very susceptible to ionophore toxicity; the lethal dose is less than 1/10th of the amount that can be safely fed to cattle. For monensin, 2-3 mg/kg, or about 1 gram, is enough to poison a 1,000 lb. horse. For salinomycin, that amount decreases to 0.6mg/kg.

How do I evaluate my horse’s risk? The first thing to look at is where a feed is produced and what else is produced in that particular feed mill. There are different risk levels ranging from feed production to storage and feeding practices.

Lower Risk

Ionophore Free Mills: This type of mill does not produce any medicated feeds that contain ionophores, and equid feed from here should be 100% safe for your horse.

Feed Stores Selling Both Ionophore-Medicated and Equid Feeds: These stores have a very low contamination risk, however it is fair to ask how they handle, store, and/or prevent potential exposure of equid feeds to feeds containing ionophores.

Ionophore Safe Mills: These mills can vary on how they ensure the safety of equine feed. Some mills have two separate production lines for equid feed and feed containing ionophores, however, some mills use the same production line, but have specific cleaning methods and/or sensors for detecting the presence of ionophores in the system. These facilities have the highest risk for machine or human error, even if that is a very rare occurrence.

Facilities where Cattle/Goats/Poultry and Horses are housed together: This can be a high risk if the facility is using feed with ionophores, because that feed will not necessarily look different than the horse feed. Additionally, if the horses are fed separately, but turned out where cattle have been fed, there is no guarantee that the horse won’t find/eat leftover feed. An additional risk occurs when feed storage containers are not labeled clearly and separated in the feed room, or if a “new” person is feeding and doesn’t know.

Higher Risk

Key Points:

- Ionophores are a valuable and safe way to improve cattle/goat/poultry health without the use of excess antibiotics. While ionophore poisonings in equine are not common, they still occur. Human and machine error can happen. It is easy to feel panic or frustration when major incidents occur. On occasion, mistakes in mixing or cleaning protocols at feed mills have happened, resulting in distribution of horse feed tainted with ionophores.

- The U.S. Food and Drug Administration introduced specific rules in 2011 to establish CGMP's (Current Good Manufacturing Practices) and preventative controls for animal feed manufacturers. These animal feed regulations should decrease the potential of feed mill errors. In Arizona, there is a required feed distribution license that requires manufactures and feed distributors doing business in Arizona to be registered and licensed. This list can be found at <https://agriculture.az.gov/animals/feed>.
- If you are considering removing grain from your horse's diet over the fear of ionophore toxicity, work with your veterinarian or professional nutritional consultant to ensure the animal's nutritional needs will be met without a grain based feed. If you have any question or concern that your equine(s) may have accessed feed containing ionophores, contact your veterinarian immediately.

Ionophore Risk Mitigation Strategies:

- ✓ What feed mill is used to produce and package the feed
- ✓ If the feed mill follows good manufacturing practices (Hazard Analysis and Critical Control Point (HACCP)) and other controls
- ✓ Is the mill "ionophore free" or "ionophore safe"

Other Tips:

- Ranches and other operations that house both horses and cattle (such as feedlots and roping arenas) where there are often many different species on-site including cattle and horses may be the most at risk for feeding mishaps caused by human error.
- Additionally, many of these operations employ temporary seasonal workers to assist operations during particularly busy times of the year. Management needs to see to it that quality help is being hired and that clear education, training and Standard Operating Procedures (SOPs) are provided and being followed to ensure that feed deliveries, inventory management and feeding of the animals themselves are all according to the established process.
- Always maintain good records of feed provided to your horse, including labels and lot numbers in the case of a recall or suspected poisoning. Tear off the entire label (including the lot number), mark it with the date opened, and place it in your filing cabinet.
- Careful consideration of the source of social media informational posts (knowledge, professional credentials) is necessary if looking at social media for updates on current incidents of interest. Disinformation, bias, and sensationalism are often used to direct web traffic, and outright wrong information are rampant in this arena. Generally speaking, quality information should be sourced from universities and cooperative extension, qualified medical or industry professionals, and other reputable sources that may have a social media presence.

References:

<https://extension.arizona.edu/pubs/ionophore-toxicity-horses>
<https://pubchem.ncbi.nlm.nih.gov/compound/Rumensin>
<https://utbeef.tennessee.edu/cattle-nutrition-faq-what-is-an-ionophore/>
<https://agriculture.az.gov/animals/feed>

Authors: Greene, E.A., A.D. Wright, and A. Thompson
 University of Arizona Cooperative Extension

Scan for more information on
 Ionophore Toxicity:



Or: <https://extension.arizona.edu/pubs/ionophore-toxicity-horses>



ALIRT Bulletin Contact: Dr. Betsy Greene
 Professor/State Horse Extension Specialist
betsygreene@arizona.edu

