

MONENSIN TOXICITY IN HORSES

WHAT SHOULD YOU BE AWARE OF?

WHAT IS MONENSIN?

Monensin is an additive found in cattle and poultry feeds. It is used to control parasites (*coccidian*) and improve feed efficiency. Monensin causes oxidative damage to mitochondria. Cardiac muscle has the highest density of mitochondria, so it is the most severely affected tissue. It also affects skeletal muscles which can cause generalized weakness and spinal cord tissues. These symptoms can then cause ataxia. This can result in death or acute onset of weakness. Monensin toxicity can also cause damage to the heart that would become apparent weeks to months after exposure when heart failure occurs.

IS YOUR ANIMAL SAFE?

Monensin does not cause problems in cattle because they have a high tolerance, however, horses are extremely sensitive to monensin and it is toxic to them. It causes myocardial necrosis. Horses can die from the toxicity, recover completely, or develop heart failure and have to be humanely euthanized.

CLINICAL SIGNS

- Initially just off feed and/or showing signs of colic
- Choke
- Progresses to weakness in rear limbs and ataxia (similar to neurological disease)
- Progress to lying down, but can stand; muscle fasciculations sometimes seen (similar to equine motor neuron disease or botulism)
- Become recumbent and unable to stand

SUBCLINICAL EXPOSURE

- No clinical signs or just lethargic
- Elevated CK and AST
- Elevated cardiac troponin

RECOMMENDED PROCEDURE FOR EXPOSED HORSES

- Physical examination including auscultation of the heart; listen for arrhythmias, tachycardia, and/or murmurs
- Blood collection
 - CK, AST
 - Cardiac troponin
- Clients should be advised to:
 - Collect a 1 gallon ziplock bag of feed and store it in the freezer
 - Contact a local feed store and notify them of the problem.
 - Write down **ALL** findings
 - Locate and save receipts, feed bags, and labels

TREATMENT OF CLINICAL CASES

- If feed was consumed recently (<12 hours), administer mineral oil
- If recumbent, provide supportive care
- Administer intravenous fluids at maintenance rate to support clearance of myoglobin
- Administer 1.1 mg/kg IV flunixin meglumine or PO BID for general anti-inflammatory
- Give DMSO 1g/kg diluted to 10% in fluids IV BID for 3 days