

Research Update: COLIC

Ongoing and recent projects funded by
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Summarization on the use of Flunixin or Firocoxib in Postoperative Colic Patients researched by Dr. Anthony Blikslager and Dr. Amanda Ziegler's at North Carolina State University.



The Threat--- Colic is the leading cause of death in horses behind old age according to studies performed by the United States Department of Agriculture. The main reason for death in horses with colic is absorption of bacterial toxins from the gut into the bloodstream. This causes shock, which is often difficult to manage. Treatment has greatly improved over the last 20-30-years, but periodically requires re-evaluation to make sure veterinarians are treating with the best possible medications. One very important drug used to combat colic is the non-steroidal anti-inflammatory drug (NSAID) flunixin (Banamine®) because it is a painkiller as well as helping to control the signs of the shock caused by bacterial toxins. However, it has side effects, including one that we have recently discovered in which flunixin slows down intestinal healing. This paradoxically increases absorption of bacterial toxins. Interestingly, a new NSAID on the market for horses, firocoxib (Equioxx®), provides more targeted treatment of pain and inflammation while limiting side effects, including delayed intestinal repair. To find out the clinical importance of this potentially critical difference in medications, a multi-university clinical trial in which flunixin and firocoxib was compared in horses going to surgery for colic. The trial was set up so that use of firocoxib and flunixin was given in a random order, and without the veterinarian knowing which drug they were using. In this way, they removed bias and gathered clinical information as well as important indicators of the level of shock which facilitated decision-making on colic treatment.

NSAID use, however, has always been controversial in critical cases due to a high risk of adverse effects associated with their potent cyclooxygenase (COX) inhibition. There are two important COX isoenzymes: COX 1 is generally beneficial for normal renal and gastrointestinal functions and COX 2 is associated with the pain and inflammation of disease. Newer selective NSAIDs can target COX 2 driven pathology while sparing important COX 1 driven physiology, which is of critical importance in horses with severe gastrointestinal disease.

Project Goals--- Nonsteroidal anti inflammatory drugs (NSAIDs) are commonly used to manage a wide variety of conditions in horses, including management of colic. Flunixin meglumine is by far the most commonly used drug in the control of colic pain and inflammation and has become a go to for not only veterinarians but also horse owners and nonmedical equine professionals. Emerging research suggests that firocoxib, a COX 2 selective NSAID labelled for use in horses, may be preferable for use in colic cases in spite of the decades long dogma that flunixin saves lives.

What Is Being Learned--- Both NSAIDs controlled horses' pain and heart rates (increased heart rates are indicative of pain) effectively; and horses treated with firocoxib had lower plasma sCD14 (an endotoxin biomarker) levels compared to their flunixin-meglumine-treated counterparts. Ultimately, the researchers concluded that firocoxib and flunixin meglumine provided similar levels of pain control, but firocoxib resulted in reduced evidence of endotoxemia at 48 hours post-surgery.

Dr. Ziegler explains more on the use of flunixin-meglumine and firocoxib in colic patients here:

<https://vimeo.com/318977940>