Effects of Firocoxib and Phenylbutazone Dosed for 42 Days in Horses

Bruce N. Kunkle, DVM, MS, PhD; Judith E. Saik, DVM, Diplomate ACVP; David K. Attebery, MS; Norba L. Targa, HT; Diane L. Larsen, DVM, PhD; and Peter D. Hanson, DVM, PhD*

Firocoxib administered at the therapeutic dose was well tolerated, whereas phenylbutazone was associated with increased incidence of gastrointestinal ulceration and tubulointerstitial nephropathy at therapeutic levels. Authors' addresses: Merial Limited, Missouri Research Center, 6498 Jade Road, Fulton, Missouri 65251 (Kunkle, Attebery); and Merial Limited, 3239 Satellite Blvd., Duluth, Georgia 30096 (Saik, Targa, Larsen, Hanson); e-mail: Bruce.Kunkle@Merial.com. *Presenting author. © 2010 AAEP.

1. Introduction
Firocoxib is a coxib class non-steroidal anti-inflammatory drug approved for the control of pain and inflammation associated with osteoarthritis in horses at a dose of 0.1 mg/kg/day for up to 14 days.

2. Materials and Methods
In this study, multiple dose levels of firocoxib were compared to a therapeutic phenylbutazone administered q 24 h for 42 days. Horses were allocated to groups of eight horses as follows: (1) untreated control, (2) 1 g/227 kg (4.4 mg/kg) phenylbutazone paste, (3) 0.1 mg/kg firocoxib, (4) 0.3 mg/kg firocoxib, and (5) 0.5 mg/kg firocoxib. At necropsy on day 42, gross observations were recorded and tissues examined microscopically. The protocol for this study was approved by the Merial Institutional Animal Care and Use Committee.

3. Results
On endoscopy, gastric glandular mucosal ulcer scores increased 88% over baseline by day 42 in the phenylbutazone group, whereas control and 0.5 mg/kg firocoxib horses were similar, with an 11% increase. Pathology of the gastrointestinal tract showed drug-related adverse effects at therapeutic levels of phenylbutazone, whereas no drug-related effects were seen even at five times the therapeutic level for firocoxib. Microscopic examination of the kidneys showed tubulointerstitial nephropathy at a therapeutic level in the phenylbutazone horses, whereas only in the higher-dose firocoxib horses.

4. Discussion
The results of this study indicated that, after 42 days of treatment at therapeutic levels, firocoxib was well tolerated, whereas phenylbutazone was associated with gastrointestinal ulceration and tubulointerstitial nephropathy.

Footnotes
aEQUIOXX Paste; Merial Limited, Duluth, GA 30096–4640.
bPhenylbutazone paste; Schering-Plough Animal Health, Union, NJ 07083.