EFFECTS OF MELOXICAM OR PHENYLBUTAZONE ON RENAL RESPONSES IN HEALTHY HORSES

Non-steroidal anti-inflammatory drugs (NSAIDS) are frequently used in horses. Their therapeutic effect is by decreasing the COX enzymes. They are normally used for pain, inflammation, and arthritis.

There are two different isoforms of COX enzymes:

COX1 creates prostaglandins which are beneficial and have normal housekeeping functions, especially within the stomach. These include an increase in mucous production, reduction in stomach acid secretion and increase blood flow in the stomach walls.

COX2 is utilized in pathways that involve inflammation. This is that pathway that we want to affect to reduce destructive inflammation.

NSAIDS indiscriminately inhibit both the COX1 and COX2 pathways. The inhibition of the COX1 pathway results in

- Stomach damage – ulcers
- Colon damage – right dorsal colitis
- Renal damage

It has been the trend for many years to use COX2-specific inhibitors with the thought that this would reduce the side effects that occur with the inhibition of COX1. Nice theory, but in humans, it was found that this was not as effective as they had hoped. Vioxx was withdrawn from the human market because of side effects. But in horses, the COX2 inhibitor is still being used (Equioxx and Previcox).

Phenylbutazone (bute) is known to affect both COX1 and COX2. Another drug, meloxicam, preferentially affects COX2. Raidal et al., studied the effect of meloxicam on
renal functioning compared to bute\(^1\), hoping to find that meloxicam would have less negative effects on the kidneys than bute has. The experiment was conducted with the use of Lasix and dobutamine to measure renal functioning. They did not measure COX2 directly. What they found was that there was an increased urine output with all treatment groups after exercise or Lasix treatment. They suggest that this would indicate that COX2 has the same deleterious effects on the kidneys as COX1. While this study has some shortcomings, it reminds us that COX2 inhibitors have side effects, just as the COX1 inhibitors.

**Take Home Message:**

- Meloxicam, a COX2 inhibitor, has the same negative effects on the kidneys that other NSAIDS have.

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**References:**


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This article originally appeared in Dr. Eleanor Kellon's ezine, *The Horse's Mouth*. For subscription information, please go to www.drkellon.com.