SUMMARY: Four-Month Growth Comparison in Yearling Horses Purge-Dewormed with Ivermectin Paste or Dewormed with Daily Feeding of Strongid® C2X

Parascaris equorum is the most pathogenic parasite of young horses (Figure 1) and is widely prevalent in the juvenile equine population, generally in the range of 22-60%, and is practically ubiquitous on breeding farms. Dr. Martin Nielsen, a noted equine parasitologist at the University of Kentucky Gluck Equine Research Center, has stated that “where there are foals there is Parascaris.” Female ascarids are highly prolific, producing as many as 200,000 eggs a day and a lifetime total in the millions. Ascarid eggs are extremely resistant to the environment and can remain viable for years. As a result, pastures where horses graze are generally heavily contaminated and a source of continuous infection.

This report describes a study comparing weight gain in yearling American Quarter Horses given either of two anthelmintic treatments: purge deworming with ivermectin (IVM) at 8-week intervals or initial IVM purge deworming followed by daily feeding of pyrantel tartrate (STRONGID® C 2X, Zoetis). Test horses were maintained at the 6666 Ranch in Guthrie, Texas on pastures contaminated with P. equorum.

Fecal egg count (FEC) reduction is the traditional method of calculating anthelmintic treatment efficacy. However, FEC is of limited value in assessing ascarid infection status or its clinical impact because immature, migrating larvae do not produce P. equorum eggs, FECs do not accurately reflect the total adult P. equorum burden of the horse, and because FEC is not a physiologic parameter or a reliable indicator of wellbeing in horses. Growth rate was considered a relevant endpoint since ascarid infection is associated with poor weight gain in growing horses.
Study Design

One hundred thirty-six healthy, yearling American Quarter Horses 7 to 11 months of age were ranked in descending order by weight and randomly assigned in consecutive pairs to either of two treatment groups. Group T1 consisted of 35 colts and 34 fillies and group T2 consisted of 36 colts and 31 fillies.

Group T1 received an anthelmintic purge dose of IVM 1.87% paste on day 0 and 8 weeks later, according to label recommendations. Group T2 received a purge dose of IVM on day 0 followed by daily treatment with STRONGID C 2X at the recommended dosage (0.5 oz per 250 lbs) for the remainder of the 16-week study. All horses were electronically weighed on day 0 and every 4 weeks thereafter. Outcomes were reported as least squares means (LSMs), with statistical significance determined at the 10% level (p ≤ 0.10).

Results

Overall Weight Gain

The two test groups had comparable LSM starting weights, 710.2 lbs for T1 (IVM) horses and 709.8 lbs for T2 (STRONGID C 2X) horses. Figure 2 compares the LSM overall and intra-study net weight gain for the two test groups. Compared to group T1 (IVM) horses, group T2 (STRONGID C 2X) horses had significantly greater cumulative LSM weight gains on study days 29 (53.65 vs. 45.08 lbs), 85 (135.85 vs. 119.37 lbs), and 113 (181.56 vs. 169.35 lbs). T1 horses had a higher LSM weight gain vs. T2 horses on day 56 (105.08 vs. 100.70 lbs), but the difference was not significant (p = 0.4738).

Intra-study weight loss

All horses that completed the study had a positive weight gain from days 0 to 113. However, 24 horses in group T1 (IVM) and 5 horses in group T2 (STRONGID C 2X) had a net intra-study weight loss (i.e., from one 4-week weight-check interval to the next). Most of the weight losses occurred between days 56 and 85. Of the 24 T1 horses that experienced an intra-study weight loss, the mean reduction was 18.96 lbs versus 14.8 lbs for the 5 T2 horses, a 28.1% difference. The maximum weight loss in a T1 horse was 53 lbs versus 27 lbs for a T2 horse.

Key Points

- Compared to group T1 ivermectin treated horses, group T2 horses treated with STRONGID C 2X had a significantly greater cumulative least squares mean (LSM) weight gain at the conclusion of the study on day 113, 181.56 lbs vs. 169.35 lbs, a 7.2% difference.
- More than 4 times as many T1 (IVM) vs. T2 (STRONGID C 2X) horses (24 vs. 5) experienced a net intra-study weight loss from one 4-week weight-check interval to the next.
- The average intra-study weight loss in T1 (IVM) horses was greater (18.96 vs. 14.8 lbs) and the maximum weight loss (53 vs. 27 lbs) was nearly double that of T2 (STRONGID C 2X) horses.
- Most of the intra-study episodes of weight loss occurred during the day 56-85 interval, conforming to the infection-to-patency life cycle of P. equorum. This suggests that larval migration adversely affected weight.
gain in a substantial percentage of growing horses, peaking when adult worms appear in the alimentary tract 10 to 12 weeks after initial infection.

**Clinical relevance**

An important advantage of daily feeding of STRONGID C 2X is that it has continuous activity against *P. equorum*, in effect breaking the ascarid life cycle and suppressing pasture contamination. When given daily with feed, pyrantel tartrate kills emerging ascarid larvae in the gut before they migrate to the liver and lungs. To a great extent, this preempts the larval migration that is a key contributor to the pathology of *P. equorum*. In contrast, purge deworming allows re-infection to occur between treatments so that the parasite life cycle is reestablished.

It is apparent that IVM-resistant *P. equorum* populations are emerging worldwide. In a recent European study, for example, IVM-resistant *P. equorum* was present in foals (n=165) on 5 of 6 farms. In 2010, a U.S. study found that FECs were reduced by only 47% in foals treated with IVM at the label dose. Parasitologists are now recommending that IVM not be considered the drug of choice for controlling *P. equorum* or used as the sole anthelmintic in young horses. In contrast, pyrantel compounds (pyrantel pamoate and pyrantel tartrate) continue to have high levels of efficacy (93-97%) against *P. equorum*. The STRONGID C 2X formulation of pyrantel tartrate ensures efficacy against *P. equorum*. Improved weight gain in growing horses treated with STRONGID C 2X can be considered a surrogate marker of wellbeing in horses that benefit from reliable ascarid control.

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References


