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Nutrition

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EFFECT OF THREE DIFFERENT EQUINE SMARTPAK® FORMULATIONS CONTAINING DIAMOND V ORIGINAL XPC ULTRA™ ON VOLATILE FATTY ACID (VFA) PRODUCTION IN AN IN-VITRO EQUINE INTESTINAL MODEL

[1]Binnebose A.M., [1]Reedy C., [2]Warzecha C., [2]Epp T. and [2]Norton S.
[1]Diamond V Mills 6301 Kirkwood Blvd SW, Cedar Rapids Iowa 52404; and [2]Diamond V Mills 2525 60th Ave SW Cedar Rapids Iowa 52404, USA
Email: andrea_binnebose@diamondv.com

Background: We aim to provide empirical data for the determination of volatile fatty acid (VFA) production with an *in vitro* model, which mimics the microbiological activity occurring in the hindgut of equids. The improvement in VFAs can be attributed to an increase in feed conversion and availability of nutrients necessary in maintaining epithelial cell growth, blood flow, and the normal secretory and absorptive functions of the intestine.
Objective: We sought to understand and evaluate the efficacy of SmartDigest® Ultra and SmartGI® Ultra that contain Diamond V Original XPC™ Ultra through production of VFAs in an equine *in vitro* intestinal model.
Methods: Formulations were provided by SmartPak, and Original XPC Ultra by Diamond V. The substrate consisted of pre-digested alfalfa/timothy hay. Fresh excreta were collected and homogenized in a stomacher. Inoculated medium was added to replicate culture tubes containing substrate and treatments. Treatments were run in combinations and without the addition of XPC Ultra or product and collected after 24 h. VFA concentrations were analysed by gas chromatography.
Results: All SmartPak Products tested in the *in vitro* model produced higher acetate, propionate, butyrate, and total VFA compared to control. SmartGI Ultra produced the highest ($p \leq 0.05$) individual and total VFAs. Additionally, we observed that the inclusion of XPC Ultra with in-active ingredients showed a similar increase in total VFA's when compared to the full product.
Conclusions: Results provide evidence to suggest that inclusion of Diamond V XPC Ultra™ with SmartDigest® and SmartGI® Ultra product lines support digestive efficiency and health as demonstrated by significantly increasing VFA production in an equine hindgut model.
Ethical animal research: No ethical approval required.
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CORRELATION BETWEEN WATER AND DRY MATTER FIBRE INTAKE AFTER SMALL INTESTINAL SURGERY: PRELIMINARY STUDY

Valle E., Giusto G., Cavallini D. and Gandini M.
Department of Veterinary Sciences, University of Turin, L.go Paolo Braccini 2-5, Grugliasco (TO), Italy.
Email: damiano.cavallini@unibo.it

Background: After colic surgery, one main concern is to give an appropriate diet to the horse and reach an adequate water intake. Return to spontaneous drinking is considered a milestone in the recovery of horses, especially after small intestinal surgery. Few studies have evaluated post-operative water consumption in horses according to the dry matter intake.
Objectives: To evaluate the relationship between water and dry matter intake after colic surgery.
Methods: 13 horses that recovered from small intestinal surgery without need for post-operative IV fluids and without post-operative reflux were evaluated for Water intake (WI) and fibre intake (FI) on DM basis were recorded for 120 h after surgery. A mixed model analysis was performed to estimate LSM of WI and FI patterns. A polynomial regression was used to evaluate the existing relationship between these two parameters
Results: Mean Horse body weight was 437 ± 118 kg and after 120 h was 36 ± 18 kg after 120 h. WI and FI are minimal 24 h after surgery (2.5 L and 770 g respectively) and increased at Day 2 (5.5 L and 1400 g), Day 3 (8.5 L and 1800 g), until Day 4 when a plateau was registered (10 L and 3.5–4 kg of DM respectively). A strong relationship was recorded in these two parameters (Adj Rsq = 97%, RMSE = 0.56, Correlation = 93%).
Conclusions: During recovery, WI and FI are lower than those of healthy horses. In horses recovered from small intestinal surgery, optimally hydrated during anaesthesia, return to spontaneous drinking is related to dry matter intake.
Ethical animal research: No ethical approval required.
Source of funding: None.
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