



The Effect of Seabuckthorn Extract on the Treatment and Prevention of Gastric Ulcers in Horses

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Introduction

Equine Gastric Ulcer Syndrome (EGUS) is a common medical problem in horses. Current pharmaceutical treatments are expensive and reduce the acidic environment of the stomach, which may affect digestion. Berries and pulp from the seabuckthorn plant (Figure 1) are a rich source of vitamins, trace minerals, amino acids, antioxidants, and other bioactive substances and have been used successfully to treat mucosal injury in man and rats. The purpose of this study was to evaluate seabuckthorn berries (SeaBuck™ SBT Gastro-Plus) for treatment and prevention of gastric ulcers in horses.



Figure 1: Seabuckthorn Berry (Hippophae rhamnoides)

Hypotheses

- Horses on seabuckthorn (SBT) supplemented diet will have fewer and less severe ulcers when compared to horses not fed SBT supplement.
- Horses on SBT supplement will have similar gastric juice pHs compared to horses not fed SBT supplement.

Methods

Eight horses* were used in a two-period crossover study (Figure 2) and assigned into control and SBT-treated groups (Figure 3). Horses were housed in stalls and fed a complete-feed (Equine Senior, Purina Mills) without hay. Horses served as their own controls. Gastroscopy was performed (Figure 4) on all horses on Day 0, at the end of week 5 and at the end of Week 6, after the feed deprivation phase of the study. Gastric fluid was aspirated during gastroscopy and pH measured. Nonglandular number (NGN) and severity (NGS), and glandular number and severity scores were assigned by a blinded observer. Data was analyzed using an ANOVA for repeated measures (Proc GLM in SAS). When significant differences ($P < 0.05$) were observed, a post-hoc Tukey's test was used to determine differences.

Figure 2 (below): Experimental Design



Figure 3 (left): Seabuckthorn supplement added to feed.



Figure 4 (right): An endoscope is used to examine gastric ulcers in a horse.

Example

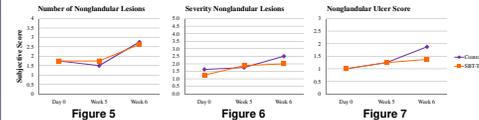


Figure 11: Gastroscopy photos from a horse that responded well to SBT. Taken of the lesser curvature and pylorus in the stomach. **Above:** During the course of the control diet (A, B, C) non-glandular lesions progressed in number, severity, and size; glandular lesions were observed at week 5 & 6. **Below:** Throughout the SBT-treatment (D, E, F) non-glandular lesions were comparatively fewer, less severe, and smaller; glandular lesions were not observed during the course of SBT-treatment.

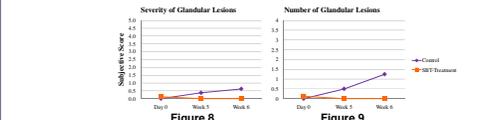


Results

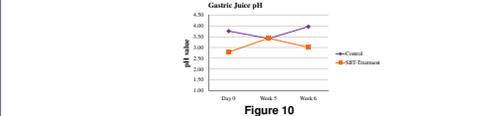
1. Gastric ulcer scores significantly increased in all horses from Week 5 to Week 6, after the feed-deprivation phase of the study.
2. There was no significant difference in the NGN ($p=0.80$) and NGS ($p=0.90$) scores in SBT-treated horses compared to non-treated controls, of non-glandular ulcers between control and SBT-treated horses. Respective Figures 5, 6, & 7.



3. There was a significant difference in glandular ulcer severity ($p=0.04$). However there was not a significant difference in the glandular ulcer number ($p=0.06$). Respective Figures 8 & 9.



4. There was no significant difference in gastric juice pH ($p=0.42$). Figure 10.



Discussion

All horses readily consumed the SBT supplement added to the feed. During the study, clinical signs of gastric ulcers became evident (such as feed refusal) however these were minimal. Gastric ulcer scores increased at the end of Week 6 and was due to the feed-deprivation phase of the study. An increase in gastric ulcer scores indicated that the model was successful in inducing or worsening gastric ulcers already present.

Nonglandular gastric ulcer number and severity were lower in the SBT-treated horses, when compared to the non-treated controls, but this was not significant. However, glandular ulcer severity was significantly lower in the SBT-treated horses compared to the control horses. Also, there were fewer glandular ulcers in the SBT-treated horses compared to control horses, but this was not significantly different ($p=0.06$).

Conclusions

- Seabuckthorn berry pulp and extract (SeaBuck SBT Gastro Plus) prevented the worsening of glandular ulcers during feed-deprivation in the horses in this study, without altering gastric juice pH.
- SBT-treated horses had fewer and less severe non-glandular ulcers, but this was not significant.
- SeaBuck SBT Gastro Plus, containing seabuckthorn berries, may have efficacy in preventing ulcers from forming or existing ulcers from worsening in horses that are stall confined and undergoing a feeding stress.
- Future studies could look at the efficacy of Seabuckthorn berry extract in conjunction with NSAIDs to prevent ulcers.

References & Acknowledgements

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*All of the procedures were approved by the Louisiana State University Institutional Animal Care and Use Committee and in accordance with the NIH Guide for the Care and Use of Laboratory Animals.