

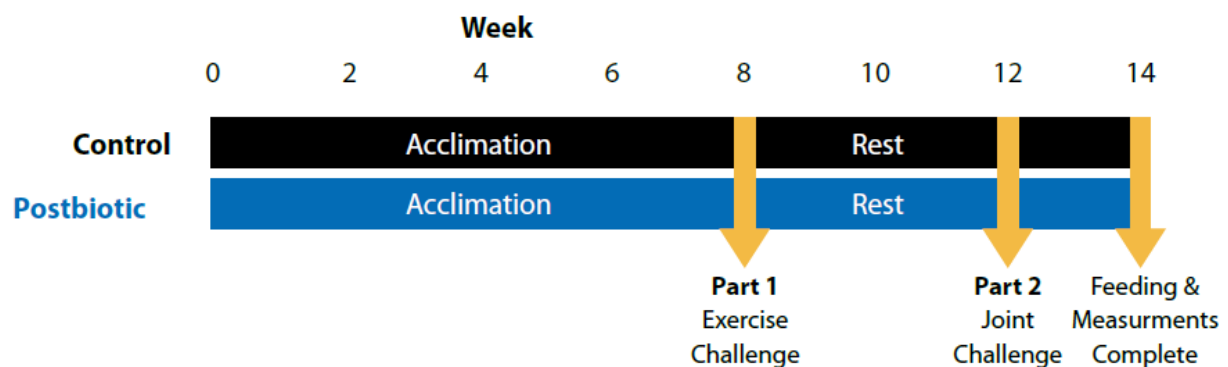
Effects of Postbiotic in Young Horses: Part 1 – Exercise Stress

Overview

- This study is part one of a two-part study with the same set of horses.

Figure 1: Timeline of experimental conditions

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- 19 yearling Quarter Horses were initially enrolled in the study. One horse was removed during Part One due to lameness unrelated to the study.
- The remaining 18 yearling Quarter Horses (9 ± 1 months; 267 ± 32 kg; 11 fillies, 7 colts) were included:
 - Yearlings were balanced by gender, age, body weight (BW), and farm of origin and randomly assigned to 1 of 2 treatment groups:
 - » Control — pelleted grain with no supplementation (CON; n=8)
 - » Treatment – pelleted grain plus *Saccharomyces cerevisiae* fermentation postbiotic
 - 21 g/hd/d [(10.5 g/feeding (n=10)]³
- Horses were individually fed a basal diet (1.25% BW/d; DM basis) of custom-formulated pelleted grain + Coastal bermudagrass hay (fed ad libitum).
- Horses received diets for 8 weeks prior to the exercise challenge.
- After 8 weeks, a 2-hour standardized submaximal exercise test (SET) was performed using a free stall mechanical exerciser.

- Blood samples were collected at week 0 (before supplementation), week 8 (pre-SET), and 0, 1, and 6 hours post-SET. Samples were tested for:

- Serum amyloid A (SAA; inflammatory biomarker) and cortisol concentration (stress biomarker) by commercial ELISA.

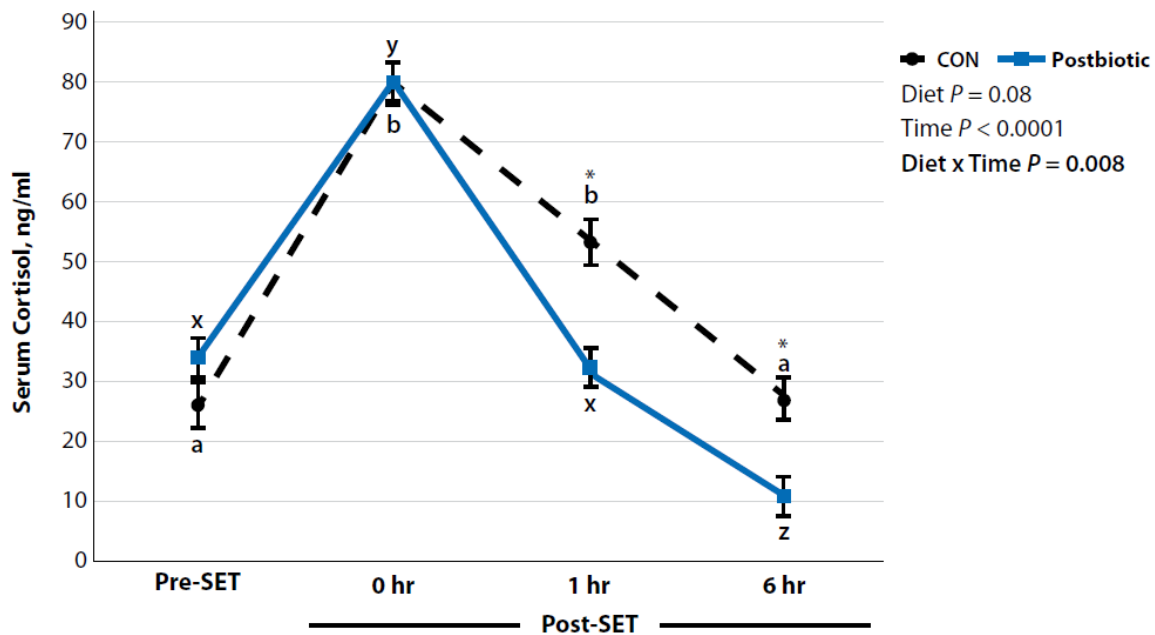
Results

Serum Cortisol Response to Exercise

- Serum cortisol increased in both groups immediately after exercise (0 hour post-SET);
- In horses fed the diet supplemented with Postbiotic, serum cortisol returned to pre-SET levels 1 hour post-SET while serum cortisol did not return to pre-SET levels until 6 hours post-SET in unsupplemented control horses.
- Further, at 6 hours post-SET, serum cortisol in treatment horses fed the diet with Postbiotic had decreased to 68% of pre-SET levels.

In response to the SET at week 8, SAA was significantly increased ($P < 0.0001$) at 6 hours post-SET in CON horses but did not show a significant increase through 6 hours post-SET in treatment horses fed the diet with Postbiotic.

Figure 2: Impact of Postbiotic on Cortisol Response Post-Exercise¹

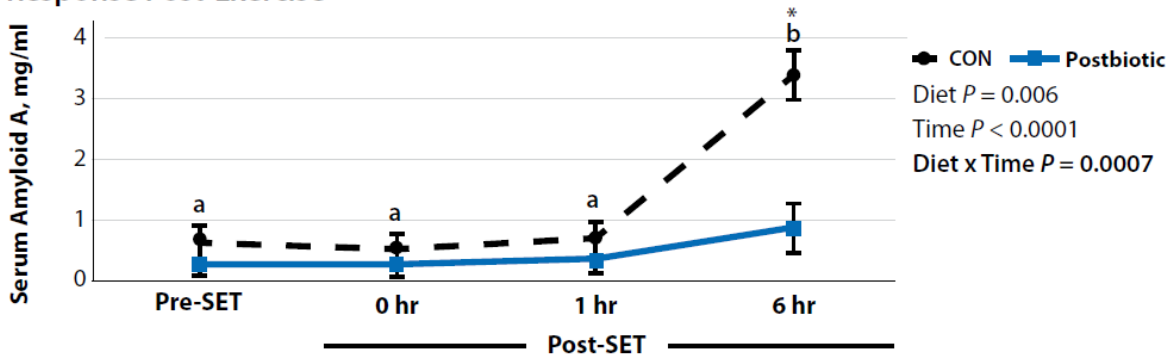


¹ Statistical significance was based on \log_{10} transformed data.

a,b,x,y,z Within dietary treatment, time points with different letters differ ($P < 0.05$).

* Within time, CON differs from Postbiotic ($P < 0.05$).

Figure 3: Impact of Postbiotic on Serum Amyloid A (SAA) Response Post-Exercise



^{a,b} Within CON, time points with different letters differ ($P < 0.0001$).

* Within time, CON differs from Postbiotic ($P < 0.0001$)

Summary

- Eight weeks of dietary supplementation with 21 g/d of postbiotic may mitigate stress (as indicated by decreased cortisol) and inflammatory responses (as indicated by lack of increased SAA) in young horses following prolonged exercise.