The effect of feeding and management on faecal pH of the New Zealand Thoroughbred racehorse

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Abstract

Quantifying the risk factors for hindgut acidosis is the first step in understanding the problems of poor management and feeding practices of horses in race training. A non-invasive measure of hindgut acidosis can be obtained by measuring faecal pH (Davie et al., 2000; Eastwood, 2002; Rowe et al., 1995; Zeyner et al., 2004; Zeyner et al., 1992; Zeyner, 1993). In this study fourteen 3-year-old Thoroughbreds in regular race training, ten Thoroughbred yearlings aged 13-15 months and 140 Thoroughbred horses of mixed aged in race training were surveyed. Approximately 200g±5g of faeces per horse was obtained from all faecal masses in the horse’s stable or yard at the time of collection. Faecal pH was measured using a commercial pH meter.

The study was divided into three experiments; experiment one consisted of fourteen Thoroughbreds within the same racing stable and identified that subtle change in diet, management, and workload had no effect on mean faecal pH during an 83 day observation period. Experiment two, identified gender, between day or time of faecal collection and the amount of concentrate offered (kg), total feed weight and roughage to concentrate ratio of the diet had no significant effect on the faecal pH of ten Thoroughbred yearlings undergoing sales preparation. However there was considerable variation in faecal pH between horses.

Experiment three surveyed 140 Thoroughbred horses under the management of 16 racehorse trainers. Trainer age, number of years training horses, horse age, horse gender, weeks in race training or racing class had no effect on mean faecal pH. Acidic faecal pH (pH ≤ 6.32) was associated with small stables (1-12 horses). Trainers from small stables offered more concentrate feed than larger stables (13+ horses). Acidic pH was associated with trainers that offered grain as the only form of concentrated feed, or offered ≤2.25kg hay/day, and horses that were fast eaters. Horses that displayed stereotypic behaviours had more alkaline faecal pH than horses that never expresses stable vices (6.70± 0.35 vs. 6.43± 0.29). The total weight of concentrates offered, feed frequency, bedding type, exercise workload and the number of hour’s horses were at pasture had no effect on mean faecal pH.
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List of Abbreviations

ADF – Acid-detergent fibre
ATP– Adenosine triphosphate
BW – Body weight in kg
Cal – calories
CP – Crude protein
DCP – Digestible crude protein
DE – Digestible energy
DM – Dry matter
FFA – Free fatty acids
GE – Gross energy
GDP– Gross Domestic Product
HCl – Hydrochloric acid
J – Joules
KJ – Kilojoule
Mcal – Megacalories
ME – Metabolisable energy
MJ – Megajoule
NZRB– New Zealand Racing Board
Net – Net energy
NZ – New Zealand
NSC – Non-structural carbohydrates
NDF – Neutral detergent fibre
NRC – National Research Council
R: C– Roughage to concentrate ratio
TAB– Totalisator agency board
TAGs– Triglycerides
VFA– Volatile fatty acids