

NUTRITION IN HORSES AND PONIES AND ITS RELATIONSHIP TO PATTERNS OF GROWTH

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Introduction

Information on nutritional needs and limitations for growth and development from birth to approximately 2 years old are needed because of significant bodily development occurs between this period. Physical maturity is achieved through rapid growth as measured by changes in body weight and height at the withers particularly during the first 12 months of age before gradually decline as maturity is attained. The nutrient requirement standards particularly energy and minerals for horses are debatable and unacceptable by many researchers and horse owners. This is in contrast to the available knowledge on other farm animals. Consequently, important aspects on growth, nutrition and adaptation of horses and ponies under modern management remain relatively obscure. Therefore, much of the equine feeding practices worldwide is by and large an art than science. This project aims to provide important information on the nutrition of horses in the tropics and to examine the relationship of the nutritional inputs with growth pattern, body weight and adaptation. The objectives of the project were: (i) To determine the growth pattern and body weight of Thoroughbred horses from birth to 18 months old and active race horses, respectively; (ii) to measure serum mineral (Ca, P and Cu) status; (iii) to evaluate the mineral (Ca, P and Cu) and oxalate contents in tropical forages; and (iv) to determine some physiological responses of Thoroughbred horses to strenuous exercises.

Materials and Methods

Body weight of horses: Growth (body weight) of 60 Thoroughbred horses from birth to 18 months old in the National Stud Farm, Ipoh was measured from 1997-1999. Body weight of 350 active racehorses at the Selangor Turf Club, Seri Kembangan was measured using electronic scales. Measurements were conducted on six racing weekends. **Mineral status in feed:** Ca, P and Cu contents of common equine feedstuff (local and imported) were estimated. **Mineral status in blood:** Plasma Ca, P and Cu levels were measured. All mineral analyses (serum and feed) were measured using atomic absorption spectrophotometer. **Minerals and oxalate in pastures:** Several tropical pastures in Institute Haiwan, Kluang were randomly collected and measured for Ca, P and oxalates. **Physiological response to strenuous exercise:** Measurement of body temp., respiration and pulse were monitored over 8 hours after strenuous exercise in 55 horses.

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Results and Discussion

The Thoroughbred horse in Malaysia were significantly shorter at the withers as compared to the Thoroughbreds in Europe, North America and Australia. Even though the growth pattern was generally similar, horses in Malaysia showed a slower growth rate as compared to their counterparts, overseas. The Thoroughbred racehorses were generally maintained at approximately 462kg weight, which was similar to horses in the UK and Australia. Horses in Japan are kept at a much heavier weight. Body weight of adult and active horses and young animals is important data used in the feeding program. Based on body weight and growth rate of the horses reared in the tropics, their nutritional requirement may be significantly different from the NRC recommendation that are extrapolated from data of horses in the US and UK. Further studies must be made to compare the requirement of minerals for horses in the tropical countries. Feeding of topical grasses predisposed particularly young horses to growth abnormalities due to excessive oxalates in the tropical grasses. The Ca: P ratio in all feedstuff including the pastures was low. Both Ca and P contents in blood of horses in Institute Haiwan indicated that the horses were feeding on nutritionally imbalance Ca: P ratio. Thus feeding tropical pastures must be supplemented with Ca and P in a correct balance. Most of the rations and feed materials contained Ca:P ratio of 1:2 to 1:5 instead of the normal ratio of approximately 2:1. Such a feeding system is particularly detrimental to foal which was evidenced by similar trend of Ca and P serum levels. Following strenuous work, most of the Thoroughbred horses needed much longer time to recover if their nutrition and routine exercise were not managed optimally.

Conclusions

Growth rate and body weight of Thoroughbred horses in tropical countries were different from those in the temperate countries. In feeding the horses in the tropics, NRC recommendations could be used as a guide and allowance must be made due to the slower growth. In feeding tropical forages either in the form of hay or grazing, particular attention must be made to the Ca:P content due to the presence of oxalates that made Ca unavailable. Following strenuous exercise, most horses needed as much as 4-8 hours to recover and there were large variations of time taken for the respiration rate, pulse rate and rectal temperature among horses, to return to the normal values.