THE EFFECT OF EXERCISE ON DIGESTIVE FUNCTION IN THE HORSE.

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The effect of exercise on digestive function in animals has received little research attention, even though enforced exercise has been shown to increase voluntary feed intake (VFI) (Oscai et al. 1973; Murray et al. 1974) and rate of liveweight gain (Pilat and Pindak 1975) in a number of animal species. In ruminants, an increased VFI is accompanied by an increased rate of flow of digesta and a reduced dry matter digestibility (see Haenlein et al. 1966), although Hintz (1982) found that lightly-exercised horses fed ad libitum, had an increased digestibility, and that strenuous exercise appeared to decrease the digestibility of the diet.

In these studies, the effect of exercise on feed intake, digestibility and the rate of flow of both the liquid and particles through the alimentary tract was studied.

Eight yearling horses were randomly allocated to one of four groups, with two horses per group. Two diets were used; these were isoenergetic and contained two levels of protein: LP - 8% CP, HP - 14% CP. The horses were allowed free access to the diets. Four horses were exercised each day (trotting for one hour at 12 km/h) while the other four horses remained in their stalls. A 20-day adjustment period preceded the 10-day collection period. Faeces were collected for 7 days (days 4 to 10 inclusive). Cr₂O₃ powder (2g) was mixed with the feed on day 1 and every day thereafter. Measured amounts of Ruthenium-phenanthroline (Ru-P) and ⁵¹Cr-EDTA were given by stomach tube at the commencement of day 4. Daily liveweight changes were recorded.

The exercised horses had a significantly greater (P<0.05) apparent dry matter digestibility than the non-exercised horses fed the same diet. The estimation of apparent dry matter digestibility by acid (2N-HCl) insoluble ash (AIA) (modified method of Van Keulen and Young 1977) and by chromium sesquioxide was found to be significantly correlated (P<0.05) with the estimate made by total faecal collection. Exercise was also found to significantly increase (P<0.05) the rate of liveweight gain and VFI. Exercise significantly increased (P<0.05) the mean retention time (MRT) (calculated according to Blaxter et al 1956) of the liquid phase of digesta (traced with ⁵¹Cr-EDTA) but decreased the MRT of the solid phase of digesta (Ru-P).

REFERENCES


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