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J.D. Pagan



THE EFFECT OF EXERCISE ON THE DIGESTIBILITY OF AN ALL FORAGE OR MIXED DIET IN THOROUGHBRED HORSES

J.D. PAGAN¹, P. HARRIS², T. BREWSTER-BARNES¹ AND S.G. JACKSON¹

¹Kentucky Equine Research, Inc., Versailles, KY

²WALTHAM Centre for Pet Nutrition, Leicestershire, UK

Four conditioned Thoroughbred geldings were used in a 2 x 2 factorial design to investigate the effect of exercise and diet on apparent nutrient digestibility. The experiment consisted of 4 periods that were 4 weeks in length. During each period, the horses were fed either an all forage diet (4.54 kg alfalfa cubes + 5.45 kg alfalfa/grass hay)(FORAGE) or a mixture of forage and grain (3.63 kg sweet feed + 2.72 kg alfalfa/grass hay + 2.27 kg alfalfa cubes)(MIXED). During each period, one horse from each diet was exercised daily on a high speed treadmill (EX). During the fourth week of each period, a complete collection digestion trial was conducted. Each morning during the collection period, the EX horses performed an exercise bout on the treadmill (inclined to 3°) which consisted of a 5 min warm-up walk, 1600 m at 4 m/s, 1600 m at 7 m/s, 1600 m at 9 m/s, 1600 m at 7 m/s, 1600 m at 4 m/s and a 5 min warm-down walk. Each afternoon, the EX horses were hand walked 1600 m. The NON-EX horses were hand walked 1600 m twice daily.

The dry matter digestibility of the MIXED diet was significantly higher than the FORAGE diet (54.6% vs 62.1%) ($p < .01$). ADF, NDF and hemicellulose digestibility were significantly higher in the FORAGE diet ($p < .05$). Exercise resulted in a small but statistically significant decrease in dry matter digestibility (57.8% vs 58.9%) ($p < .05$). This decrease in DM digestibility was primarily from a reduction in ADF digestibility. Potassium digestibility was also significantly reduced in the EX horses (66.3% vs 74.3%) ($p < .05$).

