

POST PRANDIAL GLUCOSE AND INSULIN RESPONSES TO A POST EXERCISE MEAL A.C. St. Lawrence, L. M. Lawrence, and R. J. Coleman. *University of Kentucky, Lexington, KY 40546. Presented at the Sixth International Conference on Equine Exercise Physiology, September 2002, Lexington KY*

Eight mature geldings were used in a two period crossover design experiment to determine the postprandial glucose and insulin responses to a meal offered 1 h post-exercise. Prior to this study the horses had not participated in a regular exercise program for at least 12 mos. Three wk before the first measurement period the horses began an exercise program (4d/wk) while being maintained on mixed grass pastures. For at least two d before each measurement period the horses were housed in 4 x 15 m pens with free access to water and timothy hay. During each measurement period four horses received a test meal following either a 14 h fast (SED) or a 14 h fast and exercise bout (EX). Horses in the EX group performed 48 min (8.9 km) of intermittent walking (1.6 m/s) and trotting (3.6 m/s) in a mechanical horse exerciser. At the end of the exercise test, the horses were returned to their pens and remained sedentary for 1 h before being offered the test meal. Horses in both the SED and EX groups consumed the test meal at the same time. The test meal consisted of whole oats. Intake was controlled so that each horse consumed the same amount of oats during both measurement periods which resulted in a mean non-structural carbohydrate intake of 1.12g/kgBW. Blood samples were collected immediately prior to the test meal and at 30-min intervals for 5 h after the test meal was offered for glucose and insulin measurements. The postprandial concentrations of plasma glucose increased at similar rates in the SED and EX groups from 0 to 90 min. The insulin response was also similar between treatment groups for the first 90 min. Peak glucose and insulin concentrations were similar between treatment groups. In other species, enhanced glucose transport continues for several hours post-exercise. In this study we were unable to identify an effect of prior exercise on glucose or insulin response to a meal in mature geldings. However, the exercise performed by the horses was relatively mild and a more intense bout might produce different results. A 1 h interval between the end of mild exercise and the consumption of a grain meal appears to be sufficient to allow normal metabolism of the carbohydrate component of the meal.