

Original Research

# The Effects of Feed Form on Consumption Time and Glucose and Insulin Response to a Concentrate Meal in Equine

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## Abstract

This study tested the hypothesis that feeding an identically formulated, low sugar and starch concentrate in three forms (5-mm extruded [E], 4-mm pellet [P], and 19-mm oval [O]) would affect consumption rate and glucose or insulin responses, or both. Horses received 1.8 kg treatment feed in a randomized, crossover design, with samples taken every 30 minutes for 6 hours for blood glucose and insulin response. Pearson's correlation compared consumption time, insulin and glucose peak, and time to peak insulin and glucose. The pellet (P) elicited a lower ( $P = .01$ ) glucose concentration at 2.5 hours than O. The pellet also elicited a lower ( $P = .03$ ) insulin concentration at 5.5 hours than E and O. There were no differences ( $P > .05$ ) in area under the curve (AUC) insulin, peak insulin, and time to peak insulin for the three treatments. Average insulin concentration was lower ( $P = .01$ ) for P versus O. There were no differences ( $P > .05$ ) in average insulin between P and E, nor between O and E. There were no differences ( $P > .05$ ) in AUC and peak glucose concentration. Time to peak glucose was longer ( $P = .04$ ) for P versus E. Average glucose concentration was lower ( $P = .02$ ) for P versus O. Consumption time was longer ( $P = .03$ ) for O versus P. There was a

positive correlation between consumption time and time to peak insulin ( $r = 0.46$ ,  $P = .029$ ). Further research on feeding practices, feed forms, and consumption times that affect glycemic response is necessary.