

Measurement of Equine Insulin

Equine metabolic syndrome (EMS) is a collection of metabolic/ endocrine abnormalities as risk factors for laminitis. Diagnostic investigation of EMS requires evaluation of various analytes to determine the presence of insulin dysregulation. Estimation of fasting insulin and glucose can readily be measured and are often used as initial screening tests. Because insulin dysregulation (ID) plays a crucial role in EMS, assessment for the presence of hyperinsulinism is critical.

Basal fasted and fed insulin levels $>20\text{uU/mL}$ and $>50\text{uU/mL}$ respectively supports ID. Fed insulin levels between $20 - 50\text{uU/mL}$ suggests possible ID and warrants further dynamic testing. The measurement of glucose may be useful, not in the diagnosis of ID, but rather may provide information for the presence of insulin resistance and diabetes mellitus.

Dynamic testing of insulin and glucose is more sensitive than estimation of basal levels. The oral sugar test is a simple and easily undertaken test for this. Glucose (or dextrose) powder can be administered orally after an overnight fasting period at a dose of 0.5 or 1.0g/kg body mass. Serum is collected 60 to 90 minutes after glucose administration. Post-glucose insulin levels should be $<45\text{uU/mL}$, and levels $>68\text{uU/mL}$ are indicative of ID. If insulin is $45 - 68\text{uU/mL}$, then mild ID is considered to be present. The post-glucose glucose levels should be $<6.9\text{mmol/L}$.

Dyslipidaemia is often present in horses with EMS however this is not considered a reliable test for diagnosis.