HISTORY
"No history provided"

Equine Metabolic Syndrome Test

Method ID:Subcontracted

Date Authorized: 2024-Jan-08 11:43

Sample ID	Client SampleID	Specimen type	Test	Result		Note
23-108598-0002	DIESEL	Serum	Testing provided by:	AHDC		
	DIESEL		Laboratory accession #	00787-24		
	DIESEL		Glucose	106	mg/dL	
	DIESEL		Lipemia	5		See Below
	DIESEL		Hemolysis	7		See Below
	DIESEL		Icterus	1		See Below
	DIESEL		ACTH	12.5	pg/mL	
	DIESEL		Insulin	92.22	ulU/mL	
	DIESEL		Leptin	12.52	ng/mL	
	DIESEL		Thyroxine	0.387	ug/dL	

Comments:

DIESEL	Lipemia	The lipemia index is an approximate measure of large lipid-containing particles in the sample and is weakly associated with triglyceride concentrations, attributed predominantly to chylomicrons. The index in this sample correlates to a visual estimate of no lipemia (<30 units).
DIESEL	Hemolysis	The hemolytic index is an approximate measure of the hemoglobin concentration in mg/dL.

DIESEL	Icterus	The index in this sample correlates to a visual estimate of no hemolysis (<20 units). The icteric index is an approximate measure of the total bilirubin concentration in mg/dL and will be increased by non-bilirubin chromogens (e.g. carotenoids).

Subcontractor: Animal Health Diagnostic Center - Cornell University

Glucose - Reference Interval: 71-122 mg/dL
ACTH Baseline Equine - Reference Interval: 2-30 pg/mL
Insulin Baseline Equine - Reference Interval: 10-40 uIU/mL
Leptin Baseline - Reference Interval: 1-10 ng/mL
T4 (Thyroxine) Immulite - Reference Interval: 1-3 ug/dL

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Communication History

Report date	Contact	Reported tests
2023-Dec-23 12:30	labresultsUB@mpequine.com	

Test Interpretations

ACTH Baseline Equine

EQUINE ACTH TEST

ACTH: In Equine Cushing's Disease (Pituitary Pars Intermedia Dysfunction or PPID), the concentration of ACTH is greater than the reference values above. The higher the ACTH concentration is, the more likely the diagnosis of PPID. However, because of the irregular patterns of ACTH secretion, the concentration may be within the reference range. A low ACTH concentration could be due to incorrect sample type or handling procedure, a normal low point during daily secretion, administration of exogenous steroids (including joint injections), or treatment with pergolide. Horses exhibiting clinical signs of PPID, but with an ACTH that is within reference range, should be retested in 1 – 6 months or an alternate test should be considered. The TRH response test (pre- and 10 minute post TRH) is recommended. If equine metabolic syndrome is a possible diagnosis or complication, insulin and leptin tests are recommended.

Precautions for ACTH: Seasonal elevation of ACTH levels occurs from approximately mid-August to mid-October in approximately the northern 2/3 of North America. Samples taken during this time period may have up to 3 times reference levels of ACTH in normal horses. Horses with PPID tend to have even higher ACTH concentrations in this time period. Equine plasma concentrations of ACTH are affected by stress, exercise, and some drugs. ACTH is readily metabolized in whole blood and serum samples. Blood samples must be collected with EDTA as the anticoagulant. Samples should be kept chilled and plasma removed from cells within 4 hours after collection. Test results from samples left on cells longer than 4 hours should be interpreted with caution. Horses should not be exercised or stressed before drawing blood samples because this may increase ACTH levels.

Insulin Baseline Equine

EQUINE INSULIN TEST

INSULIN: The insulin reference range given is for horses on pasture or given hay before testing. Horses fasted overnight are expected to have insulin levels <20 uIU/mL. In Equine Metabolic Syndrome (EMS), the concentration of insulin is generally greater than the reference values above. Horses with insulin concentration near the high end of the reference range may require the oral sugar test (OST) to determine whether or not the horse has EMS. High insulin concentrations may also be caused by grain meals, pregnancy, PPID, and illness. If elevated insulin may be due to pituitary pars intermedia dysfunction (PPID, Cushing's syndrome), then ACTH baseline, TRH response: ACTH, or dexamethasone suppression test are recommended. When alternate explanations for hyperinsulinemia are considered (e.g., pre-test grain meal, PPID, pain or other sources of stress), a leptin test may aid in the diagnosis of EMS, because leptin is often elevated in EMS and less affected by the other factors that modulate insulin.

Leptin Baseline

INTERPRETATION OF EQUINE LEPTIN TEST

LEPTIN: Additional Reference Ranges: Intermediate 10-20, High > 20 ng/mL. Friesians and other draft or light draft type horses appear to have a higher normal range than light horses in a limited study. The light draft normal range is < 15 ng/mL. In Equine Metabolic Syndrome (EMS), the concentration of leptin is generally in the high or intermediate reference range. Horses with Pituitary Pars Intermedia Dysplasia (PPID, Cushing's syndrome) with high ACTH and high insulin, but low leptin are more likely to have hyperinsulinemia caused by PPID rather than EMS. High leptin levels alone do not mean a horse has EMS, it may indicate an increased potential for developing EMS and/or that the horse is overweight or obese. Ideally leptin levels will decrease as animals are treated for EMS. Leptin levels generally decrease 1-2 months before insulin levels in these horses.

T4 (Thyroxine) Immulite

T4 BASELINE TEST

The concentration of T4 in serum or plasma is within the reference value for normal healthy animals. The concentration of T4 is low or undetectable in hypothyroid animals. Clinically hypothyroid dogs with unexpectedly high T4 concentrations may have autoantibodies against thyroid hormones. The thyroglobulin autoantibody test is suggested in these cases. Hyperthyroid cats will generally have high or high normal T4 results. Free T4 by dialysis can be used to verify borderline results. Horses often have low T4 levels secondary to EMS or PPID. Animals on anti-inflammatories, antibiotics or with chronic illness may have falsely decreased total T4. Animals given supplements containing kelp may have elevated results and show clinical signs of hyperthyroidism. Treatment is best monitored with a 4 to 6 hour post treatment T4 level, except for dogs with positive autoantibody tests which should be monitored using free T4 by dialysis. For further interpretation please see the interpretation on our webpage at: https://ahdc.vet.cornell.edu/Sects/Endo/canineteslinfo.cfm or https://ahdc.vet.cornell.edu/Sects/Endo/equinetestinfo.cfm or