

Cornell University Animal Health Diagnostic Center

Why does your veterinarian need to run laboratory tests on your donkey?

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Learning objectives

 Discuss scenarios in which some diagnostic laboratory tests may be useful

RD Vacuta ner!

Understand the basics about these tests utilized by veterinarians

 Gain knowledge of some of the limitations of those tests and possible solutions

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Clinical Observations of Concern

- Dullness
- Inappetence
- Isolation from companion or group
- Recumbency
- Lack of ear movement/ lowered head
- Other colic signs

- Abnormal manure
- Respiratory disease
- Neurologic disease
- Muscle loss
- Weight loss
- Abnormal haircoat
- Lameness



Sick donkey...could be anything





Why Run Blood Tests?

- If only we had a crystal ball...
- Objective tests necessary due to stoic nature
- Clinical signs not specific for specific disease
- Accurate diagnosis necessary for proper treatment
- Aid in prognosis
- Necessary for management of the group/herd



Basic Bloodwork

- Complete Blood Count (CBC, or Hemogram)
 - +/- SAA or Fibrinogen
- Serum Chemistry with Triglycerides
- A starting point for the "dull donkey" and just about everything else





Hemogram: The Basics

- What your vet will collect:
 - Tube of anticoagulated blood (EDTA, or purple top is common)
 - Plus some blood smears
- What it will provide:
 - Information about RBCs, WBCs, Platelets, sometimes visible infectious agents





Inflammatory markers

- Any tissue damage → induces acute phase response (inflammatory reactions)
- Liver produces acute phase proteins
- Can be measured in a serum sample
- SAA= increases and decreases very quickly; Fibrinogen takes several days to increase and remains elevated longer
- Non-specific for the cause of inflammation
- SAA is useful as a tool to monitor response to treatment
- There is a stall-side test available for SAA





Serum Chemistry: The Basics

- What your vet will collect:
 - Red top or serum separator tube of blood
 - Must separate the serum from the clot as soon as possible for most accurate results
- What it will provide:
 - Info on the function of various body systems
 - Must be interpreted alongside the clinical signs, history, other tests, etc
 - In some labs, DVM must request Triglycerides separately!—very important for donkeys!



Why Triglycerides?

- Donkeys very prone to hyperlipemia
- Concurrent disease
- Inappetence or other trigger → mobilization of fats → rate exceeds the rate of uptake of the triglycerides into tissue for use as energy → results in fatty infiltration of organs (liver, pancreas, kidneys) → multiple organ failure
- Be mindful of sham eating





Some Test Limitations

- Lack of established donkey RI's at the lab!
- Factors other than disease can affect results
 - Storage of serum or plasma on the cells
 - Rupture RBCs (hemolysis)
 - Lipemia
 - Icterus (hyperbilirubinemia)
 - Age
 - Drugs, diet, etc
 - The analyzer used





Respiratory Disease

- Stoic nature
- Insensitive cough reflex
- Fever (normal is ~97.7-100°F)
- Increased respiratory rate (normal is ~12-28 breaths/min) or effort
- Many infectious and non-infectious causes (and many are different from horses)
- And all may cause secondary hyperlipemia





Respiratory Disease Laboratory Diagnostics

- CBC/Chemistry (with triglycerides!)/ SAA
- Nasopharyngeal swabs/washes for PCR, Virus isolation, and/or cultures
- Depending on duration of illness, blood for antibody titers may be useful
- Other tests for underlying immune issues (Cushing's) or nutritional deficiencies



Photo Credit: Boyle, AG. *Streptococcus equi* subspecies *equi* infection (Strangles) in Horses. Compendium: CE for Veterinarians, March 2011.



Weight Loss or Muscle Loss

- Monitor the body condition score of your donkey
- Must use your hands!
- Regular dental examinations are essential
- What is your donkey eating? Vitamins/minerals? (Se blocks often not enough for Se deficient areas)





Selenium in Counties of the Conterminous States





Weight Loss/Muscle Loss Laboratory Diagnostics

- Fecal egg count
- CBC/Chemistry (with triglycerides)/SAA
- Selenium measured in EDTA whole blood (are soils in your area deficient?)
- Vitamin E measured in serum
- Consider testing for Cushing's



Cushing's (PPID) and Equine (Donkey) Metabolic Syndrome

- Both occur in donkeys
- Laminitis may be the only clinical sign of either
- Hyperlipemia can occur concurrently with either condition





Cushing's (PPID)

- High fecal egg counts
- Poorly healing wounds/recurrent infections
- Laminitis!
- Weight loss and loss of muscle mass
- Change in attitude/lethargy
- Delayed hair coat shedding



- Requires an ACTH level (EDTA whole blood sample collected, spun and separated within 4 hours)
- Reference interval for donkeys?



Equine/Donkey Metabolic Syndrome (EMS)

- Collection of risk factors for endocrinopathic laminitis
- Donkeys at high risk
- Insulin dysregulation
 - Upset balance between insulin, glucose and lipids
- Unlike horses, no direct link between 个 insulin and laminitis in donkeys yet
- Along with laminitis, also at risk for hyperlipemia





Equine/Donkey Metabolic Syndrome (EMS)

- Measure insulin in blood sample (RI's?, do not use RI's from another lab) or oral sugar test
- Leptin also measured in blood sample (can also be useful for tracking weight loss)
- Some have both Cushing's and EMS, so good idea to test for both concurrently





How does your veterinarian interpret results?

- Very carefully!
- Along with history, signs, PE findings
- Never a bad idea to do routine blood work annually to establish "normal" values for your own donkeys
- Pattern recognition is important
- With help from the laboratory and knowledge of the test limitations

Questions?

