

Hematology

The classic stress leukogram pattern from increased endogenous or exogenously administered corticosteroids like dexamethasone will include neutrophilia, lymphopenia, monocytosis, and eosinopenia. One of the most reliable findings is lymphopenia, followed by increased segmented neutrophils.

Persistent lymphocytosis is commonly observed in patients with bovine leukemia virus. This retrovirus infects lymphocytes and can proliferate into neoplastic tumors of the lymph nodes and other organs.

Fibrinogen is an acute-stage protein that increases in various inflammatory conditions of cattle, such as peritonitis, pneumonia, and pericarditis.

A normal packed red blood cell volume for a ruminant will range between 24-45%. Conditions such as copper toxicity, Anaplasmosis, Theileria, and Haemonchus contortus parasitism can cause severe anemia, resulting in a decrease in packed red blood cell volume.

Serum Chemistry

Hyponatremia, hypochloremia, and hyperkalemia are commonly associated with neonate scours, dehydration, and electrolyte imbalances.

Hypocalcemia, commonly referred to as milk fever, occurs in cattle, sheep, and goats, resulting from a calcium deficiency that frequently occurs near the time of parturition.

Hypomagnesemia, also known as grass tetany, is a condition that occurs in grazing animals when they consume rapidly growing magnesium-deficient grasses in the spring.

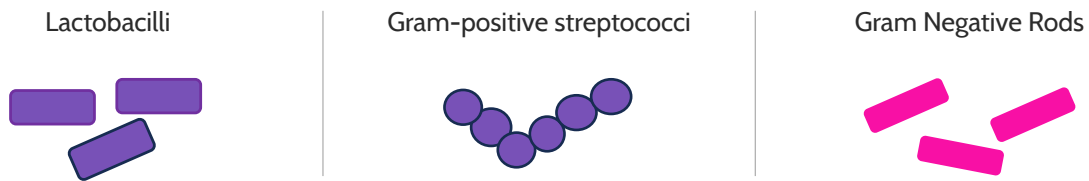
Hypoglycemia, commonly referred to as bovine ketosis and ovine pregnancy toxemia, occurs during late pregnancy when there are increased glucose demands from the fetus and the mammary glands. Ovine pregnancy toxemia occurs in sheep that are carrying twins or triplets that are calorically deprived. Ruminants are predisposed to hypoglycemia in late pregnancy or early lactation as they rely on gluconeogenesis for glucose production.

Hyperglycemia can occur in response to stress; cattle tend to produce marked stress hyperglycemia.

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Cytology

Gram-stained rumen fluid is mainly gram-negative rods in normal rumen fluid samples, but when ruminal acidosis occurs, there will be a shift in the bacterial flora, resulting in predominately gram-positive streptococci and lactobacilli.



Anaplasma marginale is a ruminant blood parasite transmitted through the bite of an infected tick or through blood contamination such as needles, taggers, and tattoo guns. Blood samples collected in anticoagulant tubes are watery and thin due to anemia. During microscopy of Giemsa-stained thin blood films, *Anaplasma* appears as blue-purple stained inclusions approximately 0.3–1 μm in diameter. These inclusions are usually located toward the margin of the infected erythrocyte.

Infected erythrocyte with blue-purple stained inclusion.

