

Glucose (Urine)

Interpretive Summary

Description: Glucosuria is an indicator of increased blood glucose or an inability of the proximal renal tubule to reabsorb glucose.

Decreased Glucose

Common Causes

- Normal
- False negative with dipsticks
 - Ascorbic acid (vitamin C)
 - Formalin
 - Low urine temperature (refrigerated urine)

Increased Glucose

Common Causes

- Diabetes mellitus
- Stress or excitement (cats)
- Pyelonephritis
- Leptospirosis

Uncommon Causes

- Normoglycemic glucosuria
 - Acquired Fanconi syndrome (due to renal tubular toxicosis or ischemia)
 - Congenital Fanconi syndrome and primary renal glucosuria (certain breeds)
 - Familial renal disease (rare)
- Hyperglycemic glucosuria (blood glucose exceeds the renal threshold)
 - Iatrogenic (infusion of fluids with dextrose)
 - Acute pancreatitis
 - Chronic liver disease
- False positive with dipsticks
 - Urinary hemorrhage, with hyperglycemia
 - Oxidizing agents: hydrogen peroxide, chlorine bleach
 - Urine pH >9.0

Related Findings

- Diabetes mellitus
 - Increased blood glucose, cholesterol
 - Ketonuria (in severe cases)
 - Increased fructosamine
 - Increased ALP and ALT often seen
- Pyelonephritis
 - Increased BUN, creatinine, phosphorus
 - Pyuria, hematuria, bacteriuria
 - Positive urine culture
- Leptospirosis
 - Increased BUN, creatinine, phosphorus

- Hematuria
 - Positive PCR or serology for leptospirosis
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Additional Information

Physiology

- Glucose is not normally detected in the urine of dogs and cats.
- The glucose present in the glomerular filtrate is almost completely reabsorbed in the proximal tubules if the cell's maximum transport mechanism (renal threshold) is not exceeded.

Diagnostic Methodology

- Reference laboratories often use the glucose oxidase/peroxidase system for detection of urine glucose.

References

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Last updated 11/1/2013