

Urinary Test in cats & dogs

(A) Urine Sample Collection

(B) Urine Test

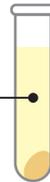
(1) Color

(2) Turbidity



Centrifuge (1,500 rpm x 5 min)

Supernatant



Sediment



(3) Urinary specific gravity (USG)

with a refractometer

(4) Chemistry

with a dipstick

pH
Protein
Bilirubin
Glucose
Ketone
Occult blood (OB)

(5) Urine Sediment

with a microscope

Low power field (x100)

Crystals

Casts

High power field (x400)

Cells

Bacteria/Fungus

*staining if necessary

Urinary Test in cats & dogs

(A) Urine Sample collection

Collection methods

1. Natural urination: Enough for cases without symptoms, easily contaminated.
2. Squeeze urination: Contraindicated for urethral obstruction, easily contaminated.
3. Catheter urination: Relatively sterile.
4. Cystocentesis: Most sterile, risk of bladder damage.

Samples to use in Urinary test

Fresh samples (within 30 min.) should be used.

- * Crystals increase in the refrigerator.
- * Bacteria increase in room temperature.

(B) Urine Test

(1) Color

Test Purpose: To check presence of blood, Hb, and/or Mb.

Diagnosis	Findings	Causes
Normal	Light yellow	—
Abnormal	Red or dark brown	Blood, Hemoglobin and/or Myoglobin

(2) Turbidity

Test Purpose: To check presence of casts, crystals, cells, and/or bacteria.

Diagnosis	Findings	Causes
Normal	Clear	—
Abnormal	Cloudy	Casts, Crystals, Cells and/or Bacteria

(3) Urinary specific gravity (USG)

Test Purpose: To evaluate the tubular capacity.

Method: With a refractometer

Diagnosis	Findings	Causes
Normal	≥ 1.030 (dogs) / ≥ 1.035 (cats)	—
Abnormal	≥ 1.050 (dogs) / ≥ 1.060 (cats) (Concentrated urine)	Dehydration etc.
	1.008 - 1.012 (Isotonic urine)	Chronic kidney disease etc.
	≤ 1.007 (Diluted urine)	Hyperhydration, Diabetes insipidus etc.

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(B) Urine Test

(4) Chemistry

Test Purpose: To determine underlying diseases.

Method: With a dipstick

Items	Diagnosis	Findings	Causes
pH	Normal	6 - 7	—
	Abnormal	> 7	Alkaline urine (Struvite formation)
		< 6	Acidic urine (Calcium oxalate (CaOx) formation)
Protein	Normal	(-) - (1+)	—
	Abnormal	≥ (2+)	Protein losing nephropathy (PLN) etc.
Glucose	Normal	(-)	—
	Abnormal	≥ (1+)	Diabetes mellitus
Ketone	Normal	(-)	—
	Abnormal	≥ (1+)	Diabetic ketoacidosis (DKA)
Bilirubin	Normal	Dogs: (-) (-) - (2+) when USG > 1.035 Cats: (-)	—
	Abnormal	Dogs: ≥ (+) ≥ (3+) when USG > 1.035 Cats: ≥ (+)	Icterus (Hemolytic or Hepatobiliary diseases)
Occult blood (OB)	Normal	(-)	—
	Abnormal	≥ (+)	Hemorrhage, Hemolysis, etc.

(5) Urine Sediment

Test Purpose: To identify the types of crystals, casts, cells and/or pathogens.

Method: With a microscope

Diagnosis	Findings	Causes
Normal	Negative	—
Abnormal	Crystals	Urolithiasis
	Casts	Kidney disease
	Cells	Hemorrhage, Inflammation, Tumors
	Bacteria	Urinary tract infection (UTI)

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