VetStix™ 11SG

Animal Health Urine Test Strips

VetStix™ 11SG Urinalysis Test Strips are a useful indicator of an animal's health, by being designed to detect values specifically suited for use in the veterinary field. VetStix™ 11SG Urinalysis Test Strips allow vets to easily and quickly detect signs of urinary tract infections, kidney and liver disease, fat breakdown, possible diabetes and more. This 11 Parameter test can eliminate the need to run a separate test for Specific Gravity (values of up to 1.07) due to the wider results range designed particularly for animal bladders. Ascorbic Acid is the newest test to be included to help eliminate false negative results.

TESTS FOR:

- Leukocytes
- Urobilinogen
- pH
- Specific Gravity
- Bilirubin
- Ascorbic Acid
- Nitrite
- Protein
- Blood
- Ketone
- Glucose

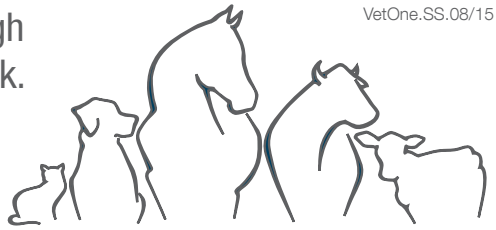
ITEM#	DESCRIPTION	SIZE
620192	VetStix 11SG	100 ct

30 Month shelf life even after being opened!

Veterinarians can purchase VetOne® products exclusively through MWI Veterinary Supply or AAHA MARKETLink.

MWI Veterinary Supply

AAHA MARKET Link®



VET one®

VetStix™ 11

Test Strips

INTENDED USE: VetStix™ 11 is a visual qualitative and semiquantitative test for the determination of blood, bilirubin, urobilinogen, ketones (acetoacetic acid), protein, nitrite, glucose, pH, specific gravity, leukocytes and ascorbic acid in urine.

SUMMARY AND PRINCIPLES OF THE PROCEDURE: The VetStix™ 11 strip contains solid phase reagent areas affixed to a plastic support and provided in a dry reagent format. Qualitative or semiquantitative determination of each analyte is made by a visual comparison with the color chart provided at each concentration range.

BLOOD: This test is based on the pseudoperoxidase activity of hemoglobin which catalyzes the reaction of 3,3'-5,5'-tetramethylbenzidine and buffered organic peroxide, 2,5-dimethylhexane-2,5-dihydroperoxide. The resulting color ranges from greenish-yellow through bluish-green to dark blue.

BILIRUBIN: This test is based on the coupling of bilirubin with 2,4-dichlorobenzene diazonium salt in a strong acid medium. The color changes from light tan to pinkish-purple.

UROBILINOGEN: The test is based on the diazotization reaction of 4-Methoxybenzene diazonium salt and urinary urobilinogen in a strong acid medium. The color changes range from pink to brown-red.

KETONES: This test is based on the reaction of acetoacetic acid in the urine with nitroprusside. The resulting color ranges from tan, when no reaction takes place, to purple for positive reaction.

PROTEIN: The test is based on the color change of the indicator, tetrabromphenol blue, in the presence of protein. A positive reaction is indicated by a color change from yellow through green and then to greenish-blue.

NITRITE: This test is based on the reaction of p-arsanilic acid and nitrite (which is derived from dietary nitrate in the presence of bacteria) in urine to form a diazonium compound. The diazonium compound in turn couples with N-(1-naphthyl) ethylenediamine in an acidic medium. The resulting color is pink. Any degree of pink color is considered positive.

GLUCOSE: This test is based on a sequential enzyme reaction. First, glucose oxidase catalyzes the formation of gluconic acid and hydrogen peroxide from the oxidation of glucose. A second enzyme, peroxidase, catalyzes the reaction of hydrogen peroxide with potassium iodide chromogen to oxidize the chromogen to colors ranging from blue through greenish-brown and brown to dark-brown.

pH: This test is based on double indicators (methyl red and bromthymol blue) which give a broad range of color covering the entire urinary pH range. Colors range from orange through greenish-yellow and green to blue.

SPECIFIC GRAVITY: This test is based on the pKa change of certain pretreated polyelectrolytes in relation to ionic concentration. In the presence of an indicator, color ranges from deep blue in urines of low ionic concentration through green and yellow-green in urines of increasing ionic concentration.

LEUKOCYTES: This test reveals the presence of granulocytes esterases. The esterases cleave a derivatized thiazole amino acid ester to liberate derivatized hydroxythiazole. This thiazole then reacts with a diazonium salt to produce a purple product.

ASCORBIC ACID: This test is based on the reducing process of ascorbic acid. The composition comprises aromatic compounds which are colored in their oxidized state but which become colorless when reduced by ascorbic acid.

Clinical Laboratory Improvement Amendments (CLIA)

COMPLEXITY: Waived

REAGENTS: Reagent strips are packaged in a desiccated plastic vial. The vial must always be tightly capped to assure product stability. Reagent content is based on dry weight at the time of impregnation of 100 strips:

BLOOD -- 2,5-Dimethylhexane-2.5-dihydroperoxide 40 mg
3,3',5,5'-Tetramethylbenzidine 3.7 mg
BILIRUBIN ------ 2,4-Dichlorobenzenediazonium Na 3.0 mg
Oxalic acid 30.0 mg
UROBILINOGEN - 4-Methoxybenzenediazonium Salt 2.5 mg
Citric acid 30.0 mg
KETONES ---------- Sodium nitoprusside 20.0 mg
Magnesium sulfate 246.5 mg
PROTEIN ---------- Tetrabromphenol blue 0.3 mg
Citric acid 110.0 mg
Trisodium citrate 46.0 mg
NITRITE ---------- p-Arsanilic acid 5.0 mg
N-(1-naphthyl)ethylenediamine 2HCl 6.0 mg
GLUCOSE ---------- Glucose oxidase 451 unit
Peroxidase 186 unit
Potassium iodide 10.0 mg
pH ---------- Methyl red 0.04 mg
Bromthymol blue 0.5 mg
SPECIFIC GRAVITY ------ Bromthymol blue 1.2 mg
Diethylenetriaminepentaacetic acid 12.0 mg
LEUKOCYTES ---------- Phenylthiazole amino acid ester 1.0 mg Diazonium salt 0.7 mg
ASCORBIC ACID---------- 2,6 Dichlorophenol indophenols 1.60mg

MATERIALS PROVIDED:

Desiccated vial containing 100 VetStix™ 11 test strips
Color chart
Product instructions

MATERIAL REQUIRED BUT NOT PROVIDED:

Specimen collection container

STORAGE: Store at room temperature between 15°C and 30°C (59°F to 86°F). Do not store test strips in refrigerator or freezer. Do not expose test strips to moisture, heat or light.

PRECAUTIONS:

1. Do not use test beyond the expiration date.
2. Reagent strips should always be stored in their desiccated vial and should be kept tightly capped.
3. Protect reagent strips from moisture, heat and light.
4. Handle all specimens as if capable of transmitting disease.
5. For in vitro diagnostic use.
6. Do not touch the test area.

SPECIMEN COLLECTION: Voided, manual expression of bladder, catheterization and cystocentesis (preferred) methods can be used. Collect urine in a clean, dry, unused container. Test urine as soon as possible after collection. If testing cannot be performed within an hour after voiding, refrigerate the specimen immediately and allow to come to room temperature before testing. It is important to use a fresh, well-mixed, uncentrifuged urine for best results.

TEST PROCEDURE:

1. Remove a VetStix™ 11 test strip from the bottle and replace the cap immediately.
2. Examine the strip for any discoloration or darkening of the reagent pads. If present, deterioration may be indicated; discard the strip.
3. Dip the strip completely into a well-mixed, uncentrifuged urine specimen for no more than one second. Remove excess urine by tapping the plastic film gently against the rim of the urine container or by gently blotting the edge on absorbent paper.
4. Under a good light source, compare the test results with the color chart provided on the test bottle label. Keep the test strip in horizontal position to avoid interaction of the chemical pads from excessive urine.

Read test results within 30 – 60 seconds (leukocytes: 90 – 120 seconds). Changes in color that appear only along the edges of the area or after more than two minutes are not significant.

RESULTS: The results are obtained by direct comparison of test strip with the color chart printed on the bottle label.

QUALITY CONTROL: Reaction of reagent strips should be confirmed by testing known positive and negative specimens or multiple analyte controls containing normal and abnormal amounts of each of the analytes being tested.

LIMITATIONS: VetStix™ 11 strips measure only urine chemical properties. A complete urinalysis also includes physical and microscopic examination of urine sediment.

URINE 24-HOUR VOLUME (ml/kg)1: Dog (24-50), Cat (18-25), Horse (8-30), Cattle (16-50), Sheep (10-40), Goat (10-40), Pig (20-80)

COLOR1: Urine color will vary between species, but is normally some shade of yellow depending on the concentration. Abnormal color changes in the urine could be due to drugs, increased urinary pigments or red blood cells. Occasionally, unusual colors may be caused by dyes associated with food or drugs.

CLARITY1: Urine is normally transparent. In small animals, turbidity or the lack of clarity suggests the presence of cells, casts, or crystals. Often refrigeration will cause the sedimentation of crystals in the urine, producing a cloudy appearance. This is usually of no significance.

ODOR1: Urine has a characteristic smell that varies slightly by species and concentration of the sample. A particularly foul odor may occur in the presence of bacteria. Thus, strong smelling urine is common in cases of infection. Sweet smelling urine can also indicate abnormal renal function so it is always important to note any strong odor associated with animal urine.

SEDIMENTATION: Urine sedimentation may contain cells, casts and crystals and is examined microscopically after centrifugation of the urine sample. A very small amount of all of the above mentioned sediments is normal. Concern begins when any of these components is significantly elevated.

Substances that cause abnormal urine color, such as drugs containing azo dyes, nitrofurantoin and riboflavin may affect the readability of reagent areas on urinalysis reagent strips. The color development on the reagent pad may be masked, or a color reaction may be produced on the pad that could be interpreted visually as a false positive. It is therefore recommended that in case of doubt the test should be repeated after withdrawal of the medication.

BLOOD: False positive reactions can occur due to traces of detergents containing peroxide or other interfering compounds.

BILIRUBIN: In individual cases small amounts of bilirubin can be detected in urine samples from dogs, although there is no indication of illness. High concentrations of nitrite inhibit the test. Prolonged exposure of the urine sample to light can cause oxidation resulting in lower or false negative values. Excreted traces of dye and medication of red color can simulate a positive result.

UROBILINOGEN: The test is restricted through higher concentrations of formaldehyde. Prolonged exposure of the urine sample to light can cause oxidization resulting in lower or false negative values. Higher or false positive results can be caused by traces of dye or medication. Higher amounts of bilirubin show up yellow on the test field.

KETONES: A ketoacidosis can also be caused through beta-hydroxybutyrate which, however, is not determined by the test strip. High concentrations of phenyl ketones interfere, altering the color reaction. Phthalein compounds produce red color tones on the test field.

PROTEIN: False positive results could be shown due to extremely alkaline urine (pH>9), resulting from traces of disinfectants or various types of medication.
NITRITE: A false positive reaction could occur due to dye excreted in the urine. False negative results can occur during antibiotic therapy.
GLUCOSE: False positive reactions can be caused by traces of detergents containing peroxide or other interfering ingredients. pH: Highly alkaline urine (pH>9) can lead to a false positive reaction on the protein test field.
SPECIFIC GRAVITY1: The test determines the ionic concentrations in urine. Non-ionic elements such as glucose or urea are not analyzed. Therefore it is recommended that the urine density is checked using a refractometer or a hydrometer.
LEUKOCYTES: A weak reaction can be expected in the case of protein excretions of over 500 mg/dl and a glucose concentration over 2 g/dl. Excretion of dyed compounds could cover up the reaction color.
ASCORBIC ACID: False positive reaction may be obtained with other reducing agent.

EXPECTED VALUES

BLOOD: Hemolysis is a natural process of recycling old or damaged red cells. But when hemoglobin appears in urine, it indicates kidney disease or urinary tract disorder. The practical detection limit of this test is approximately 10 erythrocytes per microliter of urine. Blood may be found in the urine of menstruating females. This test is highly sensitive to hemoglobin (it is slightly less so to intact erythrocytes) and thus complements the microscopic examination.
BILIRUBIN: No bilirubin is detectable in urine of healthy animals by even the most sensitive methods. Elevated bilirubin in urine always indicates disease and is the earliest sign of liver cell disease and /or biliary obstruction. The signs of "+" (0.5 mg/dl), "++" (1.0 mg/dl), and "+++" (3.0 mg/dl) signify the qualitative severity of the liver damage or bile obstruction. Even trace amounts of bilirubin are sufficiently significant to require further investigation.
UROBILINOGEN: In this test strip, the normal urobilinogen range is 0.1 to 1.0 mg/dl (1 mg/dl is approximately equal to 1 Ehrlich unit/dl).1 If results exceed the concentration of 2.0 mg/dl, the patient and/or the urine specimen should be evaluated further.
KETONES: Ketone bodies should not be detected in normal urine specimens with this reagent. The concentrations given: "±" (5 mg/dl), "+" (10 mg/dl), "++" (50 mg/dl), "+++" (100 mg/dl) correlate well with the acetoacetic acid concentration in urine. The sensitivity of this test is 5 mg acetoacetic acid per 100 ml of urine. Detectable levels of ketone may occur with frequent vomiting, diarrhea, digestive disturbances, pregnancy, or severe physical exercise.
PROTEIN: Normal urine specimens ordinarily contain some protein (0-4 mg/dl); therefore, only persistent elevated levels of urine protein indicate kidney or urinary tract disease. The persistent results of a trace level or greater indicates significant proteinuria, and thus further clinical testing is needed to evaluate the significance of results. The concentration given: "+" (30 mg/dl), "++" (100 mg/dl), "+++" (300 mg/dl), "++++" (1000 mg/dl) correlate well with the albumin concentrations in urine. Pathologic proteinuria generally gives persistent values of over 30 mg/dl.
NITRITE: Testing of urine for nitrite is a test for bacteria in urine. Any degree of pink color after 30 seconds indicates clinically significant bacteriuria. Bacteriuria is generally due to infection of the kidneys, ureters, bladder or urethra.
GLUCOSE: Normally no glucose is detectable in urine, although a minute quantity of glucose is excreted by the normal kidney. Approximately 100 mg glucose/dl of urine is detectable in this test strip. Concentrations of 100 mg/dl may be considered as abnormal if found consistently.
pH: Normal urine is slightly acid with a pH of 6. Urine pH values generally range from 5 to 8. The pH of urine is an important indicator of certain metabolic, kidney, gastrointestinal and respiratory factors.
SPECIFIC GRAVITY: Random urine specimens from various animals vary in specific gravity from 1.001 to 1.070. This test permits determination of urine SG between 1.000 and 1.070.
LEUKOCYTES: Normally no leukocytes are detectable in urine. Individually observed trace results may be of questionable clinical significance.
ASCORBIC ACID: Approximately 5 mg/dl of ascorbic acid is detectable.

PERFORMANCE CHARACTERISTICS

BLOOD: The blood/heme reaction detects heme groups found within hemoglobin and myoglobin. The test may be positive because of hematuria, hemoglobinuria or myoglobinuria.
Reference ranges:

Dog[1]	Cat[1]	Horse	Cattle	Sheep	Goat	Pig
negative	negative	negative	negative	negative	negative	negative

BILIRUBIN1: In dogs (especially male dogs) bilirubinuria is common even under normal conditions, but any bilirubinuria in cats is significant. Bilirubinuria usually precedes bilirubinemia because urine is commonly concentrated (hypersthenuric) compared to plasma.
Reference ranges:

Dog[1]	Cat[1]	Horse	Cattle	Sheep	Goat	Pig
~trace	negative	negative	negative	negative	negative	negative

UROBILINOGEN: Intestinal bacteria convert conjugated bilirubin to urobilinogen. A freshly produced urine sample is necessary for evaluation. The correlation between increases or decreases of urine urobilinogen and liver disease in animals is poor.
Reference ranges:

Dog[1]	Cat[1]	Horse	Cattle	Sheep	Goat	Pig
~trace	~trace	~trace	~trace	~trace	~trace	~trace

KETONES: Urine ketones are produced by the breakdown of lipids.
Causes for evaluations include diabetic ketoacidosis, prolonged fasting, starvation and low-carbohydrate diets.
Reference ranges:

Dog[1]	Cat[1]	Horse	Cattle	Sheep	Goat	Pig
negative	negative	negative	negative	negative	negative	negative

PROTEIN: While small amounts of protein may normally be found in the urine, proteinuria can indicate both renal and non-renal disease. If significant proteinuria is detected and there is an inactive sediment, urine protein to creatinine ratio (UPC) should be performed for protein quantification for accurate assessment and monitoring.
Reference ranges:

Dog[1]	Cat[1]	Horse	Cattle	Sheep	Goat	Pig
negative	negative	negative	negative	negative	negative	negative

NITRITE: The nitrite test is not valid for veterinary use. The majority of bacterial infections in dogs and cats are not caused by organisms that reduce nitrate to nitrite. Both false positive and false negative results are common in veterinary medicine, making this assay too insensitive for general use.
Reference ranges:

Dog[1]	Cat[1]	Horse	Cattle	Sheep	Goat	Pig
negative	negative	negative	negative	negative	negative	negative

GLUCOSE: Glucose is not usually detectable in the urine of dogs and cats and must exceed the renal threshold for re-absorption to be noted. This value should be evaluated in light of the patient's activity status and blood glucose level.
Reference ranges:

Dog[1]	Cat[1]	Horse	Cattle	Sheep	Goat	Pig
negative	negative	negative	negative	negative	negative	negative

pH: Urine pH is determined by the kidneys' ability to regulate hydrogen ion and bicarbonate concentrations within the blood. Urine pH may reflect the animal's acid-base status if hydration status and overall plasma electrolyte balance are not markedly disturbed.
Reference ranges:

Dog[1]	Cat[1]	Horse	Cattle	Sheep	Goat	Pig
5.5-7.0	5.0-7.0	7.6-9.0	7.0-8.4	7.5-8.5	7.5-8.5	5.5-8.0

SPECIFIC GRAVITY1: The urine specific gravity should be measured with a refractometer, which measures the density of the urine relative to the density of water. This value should be interpreted in light of the patient's hydration status and serum blood urea nitrogen (BUN) and creatinine levels.
Reference ranges:

Dog[1]	Cat[1]	Horse	Cattle	Sheep	Goat	Pig
1.001-1.065	1.001-1.080	1.020-1.040	1.020-1.040	1.020-1.040	1.020-1.040	1.020-1.040

LEUKOCYTES: The leukocyte test pad detects the enzyme leukocyte esterase, not individual leukocytes. Evaluation of urine leukocytes must be confirmed by urine microscopic examination. The sensitivity and specificity of the leukocyte esterase pad is questionable in veterinary medicine, especially in cat urine.
Reference ranges:

Dog[1]	Cat[1]	Horse	Cattle	Sheep	Goat	Pig
1.001-1.065	1.001-1.080	1.020-1.040	1.020-1.040	1.020-1.040	1.020-1.040	1.020-1.040

ASCORBIC ACID: High concentration of ascorbic acid in the urine, which is found in individuals who routinely ingest doses of vitamin C, can interfere with urinalysis by strip for glucose, occult blood, bilirubin and nitrite. If urine is to be tested for ascorbic acid the test should be performed at least 24 hours after the last dose of vitamin C.

REFERENCES

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