

Extended products

COBIO S50 Urine sediment Analyzer can be combined with COBIO Uritek TC-201 Urine strip Chemistry Analyzer to form a complete urine testing system.

COBIO® Uritek TC-201 Urine Strip Chemistry Analyzer



Clinical significance of biochemical detection in urine

Uric acid base reaction

Clinical significance: The clinical significance of urine acid-base changes. The change of urine pH will affect the type of crystal formation in urine is as follows:

1. Pathological acid urine is found in animals, such as carnivores, suckling animals, and starved animals. Pathological acid urine is found in fever, acidosis (diabetes, uremia, etc.). Oral acid salts, such as phosphate, ammonium chloride, and sodium chloride, can cause artificial acid urine.

2. Alkaline urine is present in herbivores. Pathologically alkaline urine is present in cystitis, urinary retention (bacterial breakdown of urea into ammonia), and alkalosis. Artificially alkaline urine can be produced by alkaline salts, such as sodium bicarbonate, sodium citrate, and sodium lactate.

Urine protein

Clinical meaning: The protein content in the urine increases, the physiology and pathology should be considered when increased protein is seen.

1. Physiological increase, usually transient and mild, is caused by renal vasoconstriction and can be seen in animals with excessive muscle activity, excessive protein intake, female animals in estrus, pregnancy, emotional excitement and newborn animals (40 hours after birth).

2. Pathological increase can be divided into three conditions: increased proteinuria before kidney, increased proteinuria after kidney and increased proteinuria after kidney.

A. Pre-renal uric albumen is increased: Caused by blame kidney disease, at disease of heat venereal disease, heart disease, central nervous system, shock, new biology. The albumen of high density low molecular weight in blood, can pass nephritic spherule and cause albuminuria. In urine the Si JONES albumen is heated up to 45-60 °C when precipitate is educed out, continue to heat up again when, dissolve it again, clinical go up to be seen at disease of amyloidosis of multiple causes.

B. Renal urine albumen is increased: Be by kidney spherule permeability enhance, kidney canaliculus again absorb ability to reduce to reach nephrosis source bleeds to cause etc. The concentration of urine albumen cannot seriously mirror kidney disease completely and the reason of disease. Severe proteinuria refers to the excretion of more than 4G of protein in the urine every day, which is seen in nephrotic syndrome, severe glomerulonephritis, nephrosclerosis, renal amyloidosis, systemic lupus erythematosus, renal vein thrombosis and serious damage to the kidney by some drugs and chemicals (such as phenol, sulfanilamide, arsenic, lead, mercury, etc.). 5 ~ 4G protein, in chronic glomerulonephritis, diabetic nephropathy, multiple myeloma, toxic nephropathy, inflammation, malignant tumors, etc. Mild proteinuria refers to less than 0.5g protein excreted from urine every day, in chronic glomerulonephritis, polycystic kidney disease, renal tubular disease, acute glomerular nephritis convalescence, glomerular nephritis incubation period or inactive period.

C. After kidney urine albumen is increased: After kidney secrete urine and the hemorrhage of reproductive organ and ooze join cause in secreted urine it is seen at urethritis, cystitis, urethritis, urolithiasis, genital tract tumor, prostatitis, vaginitis, wrapping.

Urine glucose

Clinical significance: There are two kinds of increased urine glucose, physiological and pathological.

1. Physiological increase occurs when the animal is highly excited and eats too much glucose or fructose, as well as large amounts of carbohydrate-rich food. Under these conditions, glucose may appear in the urine. After severe stress, cats may develop temporary hyperglycemia and diabetes.
2. Pathological increase is seen in hyperglycemia. When the blood sugar of an animal reaches 180 mg/DL (9.992 mmol/L) or higher (the threshold value for cattle is 100 mg/DL, i.e. 5.55 mmol/L), it exceeds the re-absorptive capacity of the renal tubules and causes glycosuria. Hyperglycemia can occur in diabetes mellitus, hyperadrenocorticism, glucagon sickness, hyperhypophysis, neonatal asphyxia, nervous disorders of cattle, hyperthyroidism, pancreatitis, enterotoxaemia of sheep, and transport tetany. Glycosuria with normal blood sugar levels is seen in primary tubular malabsorption. As for other types of nephropathy, glycosuria is rare. Intravenous administration of sugar-sweetened liquids may produce hyperglycemia and glycosuria.

Urinary ketone bodies

Acetone bodies include acetoacetic acid, β -hydroxybutyric acid and acetone. In normal animals, CO₂ and water are formed after metabolism of fat in vivo. Therefore, in normal animals, ketone bodies are only 1.5-2 mg % in blood and almost not in urine. However, in the absence of carbohydrates, the catabolism of sugar decreases and the production of oxaloacetic acid decreases. Not only acetyl-CoA cannot enter the tricarboxylic acid cycle, but it is condensed into acetoacetic acid, which increases the ketone bodies in vivo.

Clinical significance: Ketone bodies were found in the urine of cows during late pregnancy and peak lactation period, and also in ketosis, ewe toxemia of

pregnancy, hypoglycemia of piglets, diabetes mellitus, any cause or disease causing animals not to eat, liver function injury, acidosis, excessive use of estrogen and feeding high-fat and low-sugar foods.

Normally, ketone is very low in the plasma, but when an animal is ketonic, ketone bodies are significantly present in the urine, and are in fact more concentrated in the urine than in the blood. Urine testing is therefore one of the easiest ways to detect ketosis.

Urinary Occult Blood and Hemoglobin

Clinical significance: The clinical significance of a positive laboratory test results of occult blood, hemoglobin, and myoglobin is as follows:

1. The urine after hematuria centrifuge does not see red dye, Urinary sediment microscopic examination has red blood cells, known as hematuria. Clinically seen in kidney disease (acute nephritis, nephropathy, renal abscess, renal tumor, renal infarction, kidney stones, pyelonephritis), urethritis, cystitis and stones, urethritis and trauma, prostatitis, parasitosis (kidney worm disease, canine dirofilariasis) and poisoning (copper, benzene and mercury poisoning).
2. Hemoglobinuria by blood vessels. Its clinical manifestations include postpartum hemoglobinuria, bacterial hemoglobinuria, babesiosis, neonatal hemolytic disease, blood transfusion incompatible with blood group, autoimmune hemolytic anemia, calf hunger and thirst after drinking a large amount of cold water, photosensitive allergy and some poisoning diseases (sulfonamide, copper, mercury, fern, onion poisoning, etc.).
3. Myoglobinuria is produced by muscle cell lysis, with brown or black urine and no anemia symptoms, which can be seen in equine myoglobinuria, animal snake venom poisoning, young animal white muscle disease, etc.

Urinary Bilirubin

Clinical significance: Positive urine bilirubin test result, can be divided into three kinds of pre-liver, liver and after the liver.

Liver before the clinical at in hemolytic diseases (piroplasmosis, autoimmune hemolytic anemia). Hepatic mainly in liver diseases (hepatitis, liver necrosis,

cirrhosis, liver tumors), leptospirosis and copper, phosphorus and thallium poisoning. After the liver mainly in bile duct obstruction (stones, tumors, parasites). Liver disease, common hyperbilirubinemia prior to hyperbilirubinemia, hemolytic disease is generally no urinary bilirubin, only when the liver is damaged, bilirubinuria occurs.

Urobilinogen

Clinical significance: Increased urobilinogen is seen in the early stages of liver disease (hepatitis, toxic hepatitis, cirrhosis), hemolytic disease, congestive heart failure, constipation, and biliary obstruction.

The reduction of urobilinogen can be seen in the late stage of intestinal obstruction, nephritis (polyuria), diarrhea, oral antibiotic drugs (inhibiting or killing intestinal bacteria), etc.

Urine nitrite

At Dogs, cats and other animals, because the urine normally contains vitamin C, it can interfere this reaction. There is a very high false negative reaction, therefore, the use of urinary nitrite test to screen the urine of animals to check whether there are bacteria, is not applicable.