PRECISE DIAGNOSTICS FOR IMPROVED CARE

Vcheck Product catalog_ver.13

Vcheck

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Antibody Titer

MULTIPLE TESTS ON A SINGLE ANALYZER

Point-Of-Care tests of various disease markers, viral antigens of infectious diseases, and antibody titer are possible with the Vcheck analyzers.

AUTO-CODING SYSTEM WITH 2D BARCODE TECHNOLOGY

All the test devices can be randomly accessible to the Vcheck analyzer without any pre-procedure. The analyzer recognizes each test device once inserted.

AUTOMATIC RECOGNITION OF HANDWRITING

A handwritten patient name or ID on the test device can be printed with the test result for user's convenience.

HIGH ACCURACY AND REPRODUCIBILITY

Strong correlation with the gold standard methods and reliability is one of the best strengths of Vcheck analyzers.

2 DIFFERENT MODELS TO MEET YOUR NEEDS

Choose the one that best suit your needs. V200 is a compact and convenient, all-in-one analyzer; V2400 has a high throughput and enables you to process large amounts of tests quickly.

RAPID, EASY TO USE AND COST EFFECTIVE

Save time, save money, and most importantly, save lives with Vcheck today.

V200

Compact and convenient analyzer to expand your in-clinic testing

COMPACT SIZE

USER FRIENDLY

COST EFFECTIVE

Specification

Model	: Vcheck V200
Test capacity	: 1 test at a time
Power	: AC/DC adaptor
Display	: 7” Color Touch Screen
Printer	: Built-in
Connectivity	: HL7 v2.6(PCD-01) / POCT1-A
Dimension	: 200 x 240 x 205 mm
Weight	: 2.5 kg

Product No.	Product Name	Storage Temperature	Packing Unit
VC7402EA	V200	15~30°C	1 EA

Feline TnI

Cardiac Troponin I

Quantitative marker of myocardial injury

Troponin consists of 3 subunits (troponin I, T, and C) which together function as the molecular switch of cardiomyocyte contraction. Among them, cardiac Troponin I (TnI) is a sensitive and specific circulating marker of cardiac injury for cats. Cardiac injury causes the release of TnI into the circulation, where its concentration is correlated to the severity of the damage.

Species	Sample
Cat	Serum 100 µl
Testing Time	**Measuring Range**
10 min.	0.01~20 ng/ml

Clinical Application

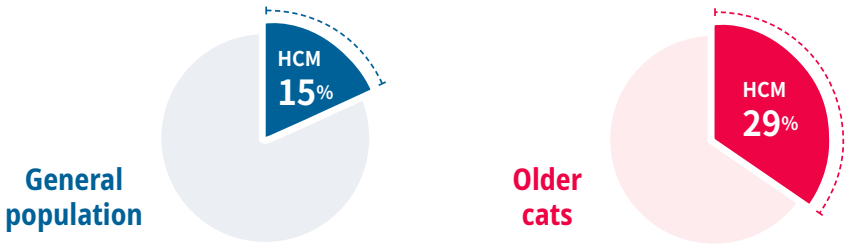
Hypertrophic cardiomyopathy (HCM) is the most common heart disease and one of the 10 most common causes of death in cats. Measuring TnI concentrations can be useful in detecting subclinical HCM and predicting cardiac death in cats with HCM.

Detects HCM in apparently healthy cats

- Annual check-up, Prior to anesthesia, Cats suspected for heart diseases
- Differentiates between normal cats and cats with subclinical HCM[1]

Predicts cardiac death in cats with HCM

- Increased TnI level is associated with high risk of cardiovascular death[2] with high level of evidence.



High prevalence of HCM even in apparently healthy cats[3]

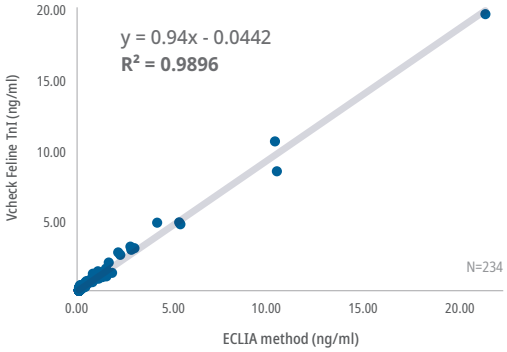
Screen for the possibility of HCM with a cardiac biomarker, Troponin I

Reference : 1. J Vet Intern Med. 2019;May;33(3):1242-1250. 2. J Vet Intern Med. 2014;28:1731-1737. 3. J Vet Cardiol. 2015;Dec;17 Suppl 1:S244-57.

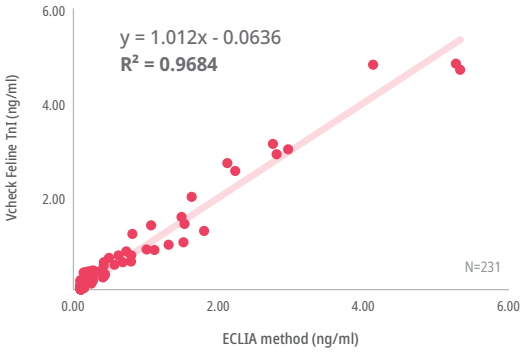
Evaluation Data

Vcheck Feline TnI has a strong correlation (y=0.94x-0.0442, **R^2=0.9896** in entire concentration; y=1.012x-0.0636, **R^2=0.9684** in low concentration) with the ECLIA method from 'R' multinational healthcare company.

Entire concentration (0~20 ng/ml)



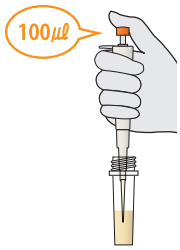
Low concentration (0~6 ng/ml)



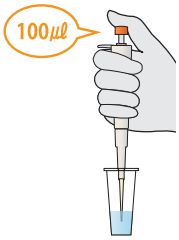
*Internal Evaluation Data

Test Procedure

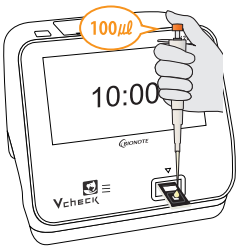
1. Add **100 µl** of the sample to the assay diluent tube



2. Mix well 5-6 times by using a **100 µl** pipetting



3. Add the mixed sample **100 µl** into the test device



< 0.18 ng/ml	0.18 - 0.28 ng/ml	> 0.28 ng/ml
Normal	Gray zone Possibility of myocardial injury	Abnomal High possibility of myocardial injury

* TnI concentrations should not be used to either confirm or exclude primary cardiac disease without the simultaneous use of echocardiography.

Product No.	Product Name	Storage Temperature	Packing Unit
VCF139DC	Vcheck Feline TnI	1~30°C	5 Tests/Kit

Canine TnI

Cardiac Troponin I

Quantitative marker of myocardial injury

Troponin consists of 3 subunits (troponin I, T, and C) which together function as a molecular switch of cardiomyocyte contraction. Among them, cardiac Troponin I (TnI) is a sensitive and specific circulating marker of cardiac injury for dogs. Cardiac injury causes the release of TnI into circulation, where its concentration is correlated to the severity of the damage.

Species	Sample
Dog	Serum 100 µl
Testing Time	**Measuring Range**
10 min.	0.01~20 ng/ml

Clinical Application

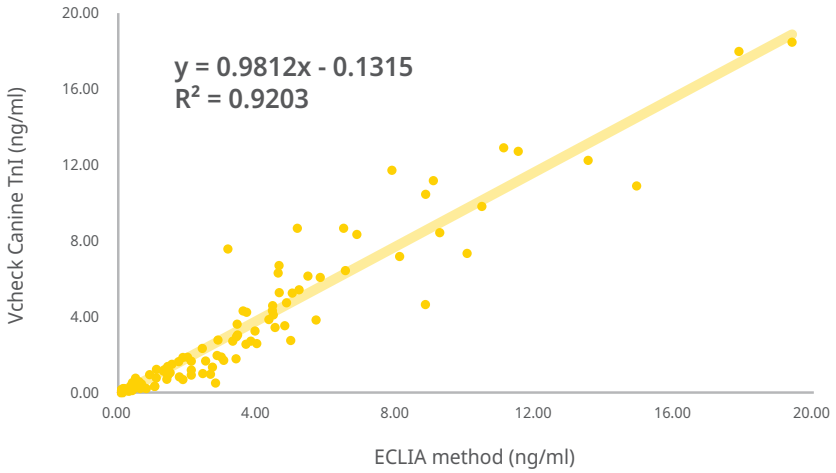
Vcheck Canine TnI can provide important diagnostic and prognostic information in patients with cardiovascular or non-cardiac diseases as a cardiac injury marker of choice.

- **Cardiac Trauma**
  - Detects or rules out significant blunt cardiac injury in frequent conditions
- **Primary Heart Disease**
  - Indicates ongoing myocyte damage in a chronic remodeling process
- **Critically ill patients**
  - Provides prognostic information irrespective of underlying disease

Evaluation Data

There is a high correlation (Y=0.9812X-0.1315, R^2=0.92)
with electrochemiluminescent immunoassay (ECLIA) from 'R' diagnostics.

Comparative analysis of TnI in canine serum samples (N=156)

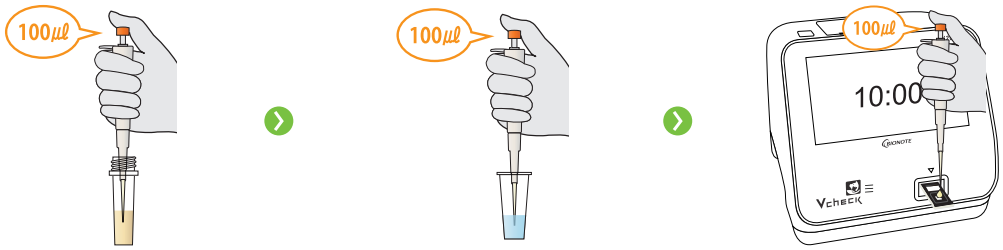


Test Procedure

1 Add **100 µl** of the sample to the assay diluent tube

2 Mix well 5-6 times by using a **100 µl** pipetting

3 Add the mixed sample **100 µl** into the test device



< 0.1 ng/ml	0.1 - 0.2 ng/ml	> 0.2 ng/ml
Normal	Gray zone Possibility of myocardial injury	Abnomal High possibility of myocardial injury

* TnI concentrations should not be used to either confirm or exclude primary cardiac disease without the simultaneous use of echocardiography.
** When interpreting a slight increase of TnI in healthy dogs, biologic variability of TnI or old ages should be taken into account.

Product No.	Product Name	Storage Temperature	Packing Unit
VCF137DC	Vcheck Canine TnI	1~30°C	5 Tests/Kit

Feline NT-proBNP

N-terminal pro-B type natriuretic peptide

Useful cardiac biomarker for screening heart disease in cats

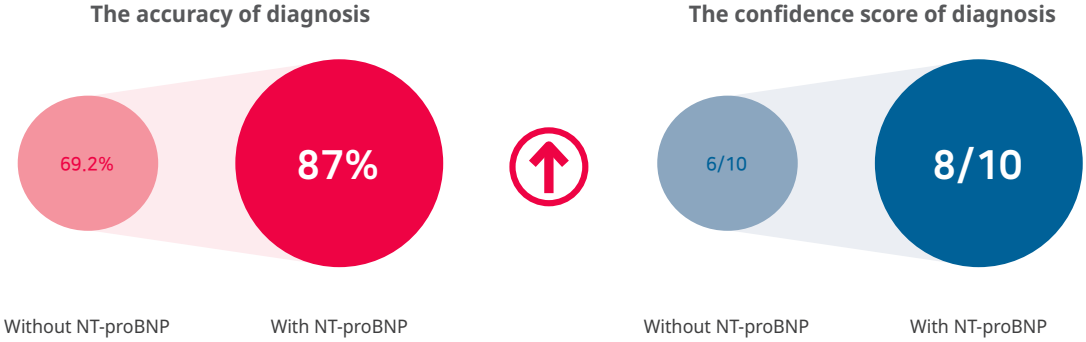
proBNP, which is produced in the cardiac myocytes, is secreted into the blood as BNP and NT-proBNP (N-terminal pro-B type natriuretic peptide). The secretion of NT-proBNP increases with excessive stretching of the myocardial wall, reflecting the severity of heart disease. It can primarily be used to screen for cardiomyopathy in asymptomatic cats, determine the cause of respiratory symptoms, or evaluate severity and prognosis.

Species	Sample
Cat	Serum 100 µl
Testing Time	**Measuring Range**
10 min.	50~1,500 pmol/L

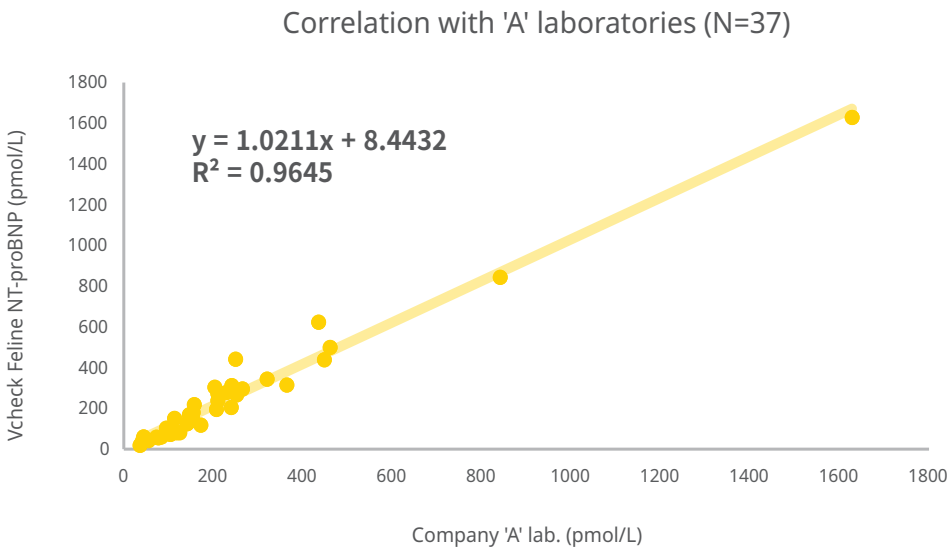
Clinical Application

- **To screen for occult heart disease**
  - Prior to anesthesia
  - In apparently healthy cats with heart murmurs
  - At risk breeds - Maine Coon, Ragdoll, Birman, Persian
- **To determine Cardiac or Respiratory disease**
  - In cats with respiratory signs such as dyspnea, tachypnea, cough
  - To differentiate cardiac and respiratory causes
- **To determine the severity of heart disease**
  - For monitoring stabilization of CHF during hospitalization
  - For predicting survival in cats with CHF

* CHF: Congestive Heart Failure



Evaluation Data

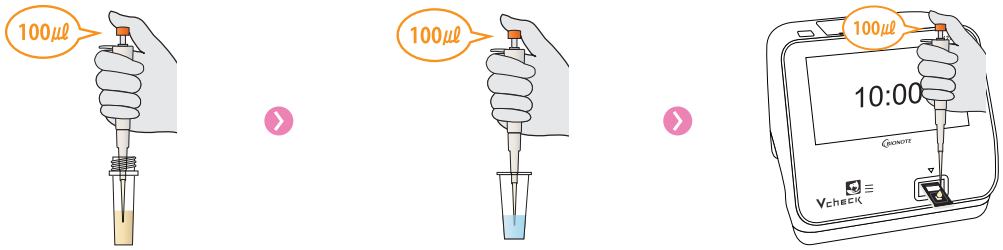


Test Procedure

1 Add **100 µl** of the sample to the assay diluent tube

2 Mix well 5-6 times by using a **100 µl** pipetting

3 Add the mixed sample **100 µl** into the test device



< 100 pmol/L	≥ 100 pmol/L
Normal	Abnomal Additional diagnostics are recommened

* A positive NT-proBNP test result should always be interpreted in combination and other diagnostic findings.
* In cats with respiratory signs, if the NT-proBNP is > 270 pmol/L, CHF is the most likely cause of the clinical signs.

Product No.	Product Name	Storage Temperature	Packing Unit
VCF130DC	Vcheck Feline NT-proBNP	1~30°C	5 Tests/Kit

Canine NT-proBNP

N-terminal pro-B type natriuretic peptide

Useful cardiac biomarker for assessing the severity of heart disease in dogs

proBNP, which is produced in the cardiac myocytes, is secreted into the blood as BNP and NT-proBNP (N-terminal pro-B type natriuretic peptide). The secretion of NT-proBNP increases with excessive stretching of the myocardial wall, reflecting the severity of heart disease. It can primarily be used to evaluate the severity of MMVD, detect early phases of DCM, or determine the cause of respiratory symptoms.

Species
Dog

Sample
Serum 100 µl

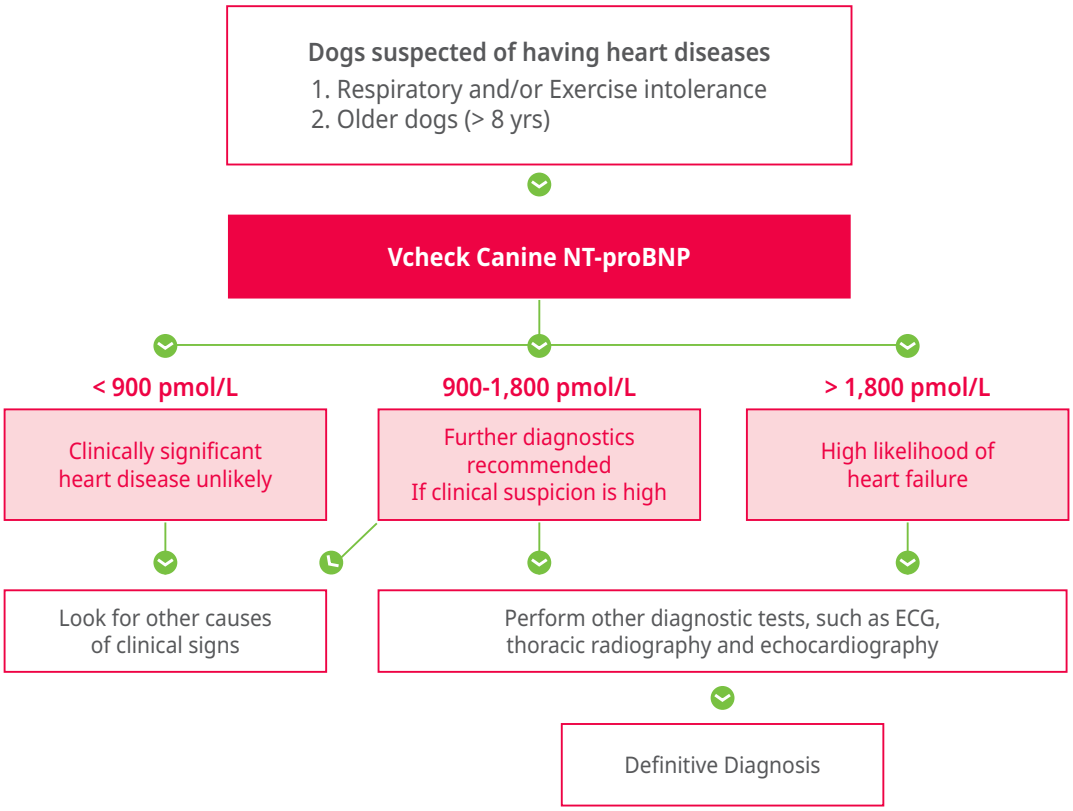
Testing Time
15 min.

Measuring Range
500~10,000 pmol/L

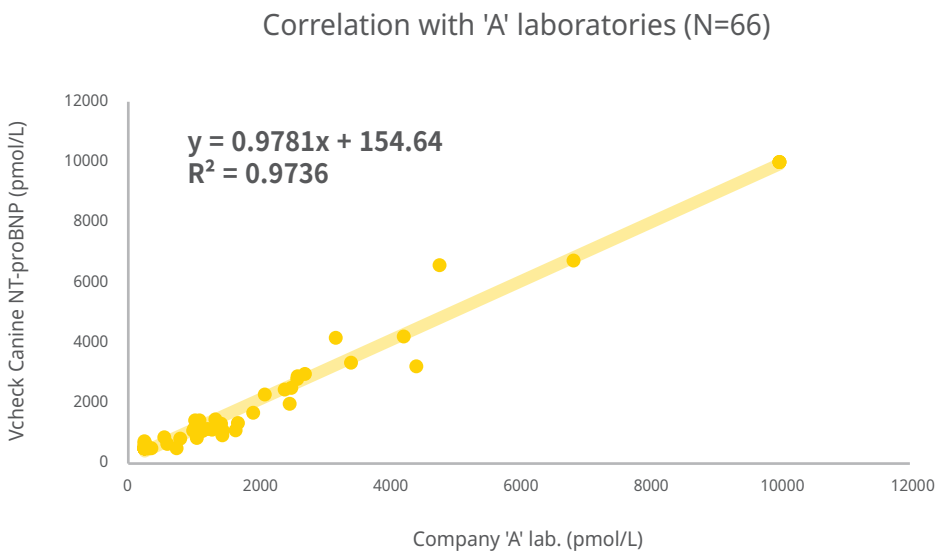
Clinical Application

- Distinguishes cardiac from respiratory disease
- Staging of Myxomatous Mitral Valve Degeneration (MMVD)
- Detects Dilated Cardiomyopathy (DCM) in Large Breeds

Clinical Algorithm



Evaluation Data

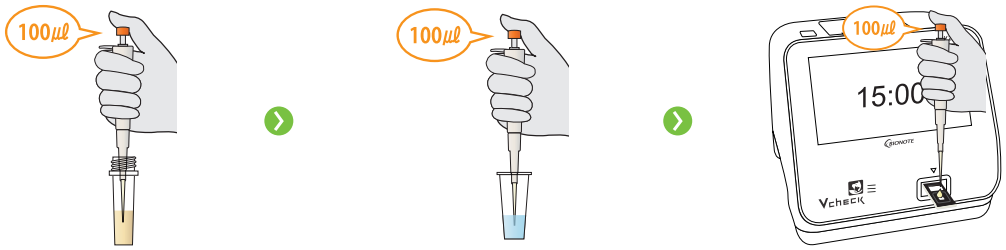


Test Procedure

1 Add **100 µl** of the sample to the assay diluent tube

2 Mix well 5-6 times by using a **100 µl** pipette

3 Add the mixed sample **100 µl** into the test device



< 900 pmol/L	900 – 1,800 pmol/L	> 1,800 pmol/L
Normal	Gray zone* Additional diagnostics are recommended	Abnormal* Additional diagnostics are recommended

* 'Abnormal' or 'Gray zone' NT-proBNP test results should always be interpreted in combination and other diagnostic findings such as an echocardiogram.

** Concentration over 735 pmol/L in Doberman Pinschers indicates an increased risk for occult dilated cardiomyopathy.

Product No.	Product Name	Storage Temperature	Packing Unit
VCF132DC	Vcheck Canine NT-proBNP	2~8°C	5 Tests/Kit

SDMA 2.0

Symmetric Dimethylarginine

Renal biomarker, simpler than ever — with the performance you trust

SDMA (Symmetric Dimethylarginine) is a methylated form of arginine that is almost exclusively excreted by the kidneys. It serves as a novel and reliable biomarker that reflects glomerular filtration rate (GFR). SDMA increases earlier than serum creatinine, enabling earlier detection of acute kidney injury (AKI) and chronic kidney disease (CKD).

Species
Dog, Cat

Sample
Serum/plasma (heparin) 25 µl

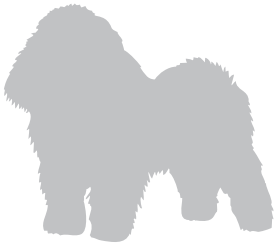
Testing Time
10 min.

Measuring Range
10~100 µg/dL

Clinical Application

SDMA is a valuable biomarker that enables early detection of kidney disease. It can be used for screening and monitoring of both acute kidney injury (AKI) and chronic kidney disease (CKD) in dogs and cats[1].

- Regular check-up : early screening of renal dysfunction
- Assessment of renal function in senior animals (>10 years)
- Renal evaluation in patients with:
  - Critical illness
  - Non-specific signs (e.g., weight loss, anorexia)
  - Low muscle mass (e.g., cachexia, hyperthyroidism)
- Monitoring renal function in patients with kidney disease



1 in 7
Has CKD[2]

Senior Dogs

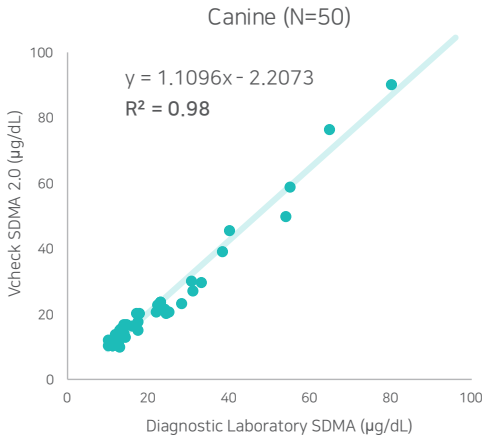
1 in 3
Has CKD[3]

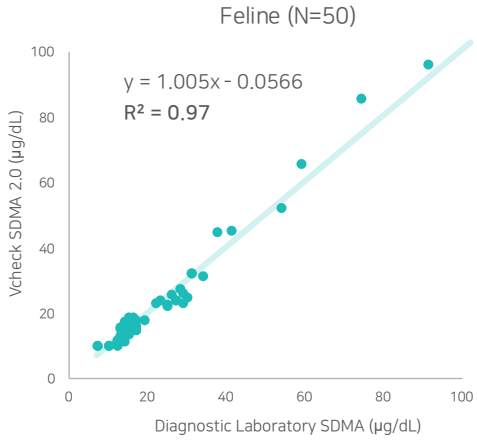
Senior Cats

Reference: 1. J Vet Intern Med. 2022 Sep;36(5):1669-1676. 2. Veterinarni Medicina, 60, 2015 (11): 589–602. 3. J Vet Intern Med. 2022 Mar;36(2):379-396.

Evaluation Data

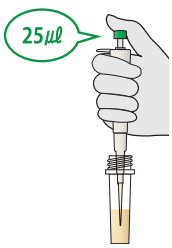
The Vcheck SDMA 2.0 Test Kit demonstrated a strong correlation with reference laboratory SDMA results, **with R^2 values exceeding 0.97** for both canine and feline samples.

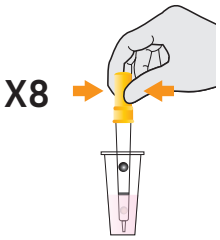


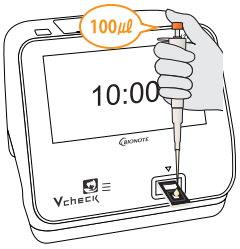


Test Procedure

1. Add **25 µl** of serum or plasma (heparin) to the assay diluent
2. Using the tablet piptte, mix at least 8 time to fully dissolve the tablet
3. Apply **100 µl** of the mixed sample, and read the result after 10 minutes







≤ 14 µg/dL	14.1 – 19.9 µg/dL	≥ 20 µg/dL
Normal (≤ 16 µg/dL in puppies*)	Gray zone (Check other evidence of kidney disease)	Abnormal (Kidney disease probable)

* Mildly increased SDMA concentrations (14–16 µg/dL) in puppies should be interpreted in light of the growth phase as well as other evidence of kidney disease.

Product No.	Product Name	Storage Temperature	Packing Unit
VCF147DD	Vcheck SDMA 2.0	2~8°C	10 Tests/Kit

D-dimer

Canine D-dimer

Highly sensitive marker for thromboembolism

D-dimer is a degradation fragment of cross-linked fibrin. This marker is specific for active coagulation and fibrinolysis, so increased D-dimer concentration indicates hypercoagulability. Measurement of plasma D-dimer concentration is useful for the diagnosis of systemic thrombosis, including pulmonary thromboembolism(PTE) and disseminated intravascular coagulation(DIC) in dogs.

Species
Dog

Sample
Plasma 5 µl
(Sodium Citrate)

Testing Time
5 min.

Measuring Range
0.1~10 µg/ml

Clinical Application

- Early detection of hypercoagulability
- A good screening test for
  - DIC (Disseminated intravascular coagulation)
  - Acute Thromboembolic Disease
- Assessment of pulmonary thromboembolism
- Monitoring of antithrombotic therapy
- Prediction of survival prognosis after surgery

Risk Factors for Thrombo-embolism

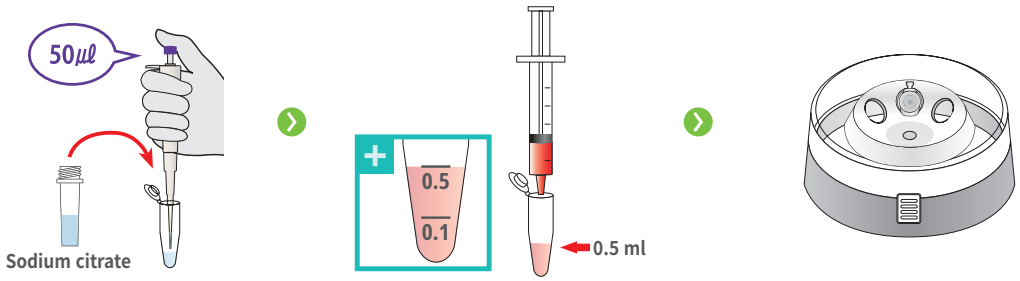
- Cancer
- Sepsis
- Pancreatitis
- Vascular diseases (i.e., heartworm)
- Congestive heart failure
- Protein-losing disease
- Immune-mediated disease
- End/Exogenous Corticosteroids

Preparation of Sample

1 Add sodium citrate **50 µl** to a 1.5 ml tube

2 Add whole blood 450 µℓ to the line of 0.5 ml

3 Mix the tube gently using a wrist snap making an 8-character shape. And centrifuge at 6,000 rpm for 5 min.

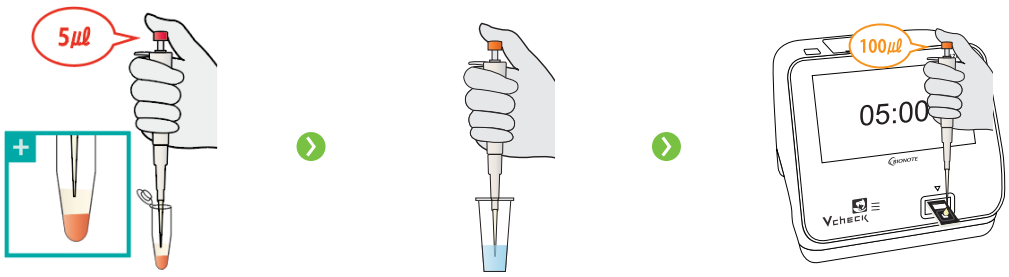


Test Procedure

1 Draw **5 µl** of plasma (Sodium citrate) and add it into an assay diluent tube

2 Mix well 5-6 times by using a **100 µl** pipetting

3 Add **100 µl** of mixture in the sample hole of the test device



< 0.3 µg/ml	≥ 0.3 µg/ml
Normal	Abnormal TE/DIC* probable

* TE : Thromboembolism, DIC : Disseminated intravascular coagulation

Product No.	Product Name	Storage Temperature	Packing Unit
VCF107DC	Vcheck D-dimer	2~8°C	5 Tests/Kit

Canine CRP 2.0

C-Reactive Protein

Canine Real-Time Inflammation Marker

CRP exists at a very low concentration in healthy dogs. But it starts to increase 4 hours after inflammatory stimulation such as infection, trauma etc. If there is no further stimulation, the concentration returns to normal within a week. So CRP can be used as a real-time inflammatory marker.

Species
Dog

Sample
Serum/Plasma (heparin) 5 µl

Testing Time
5 min.

Measuring Range
10~200 mg/L

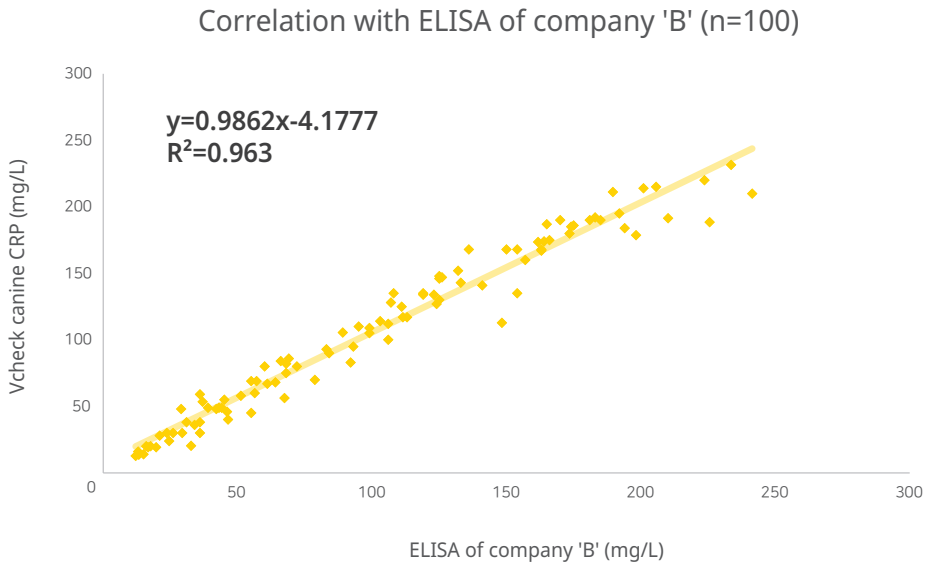
Clinical Application

- Earlier detection of acute inflammation : more sensitive than WBC
- Quantitative marker for inflammation : proportional to the severity of inflammation
- Not affected by stress, steroids, NSAIDs or antibiotics unlike WBC count
- Evaluation of treatment response, post-operative response and prognosis
- Monitoring of recurrence of immune-mediated diseases

CRP increases reported in dogs

- **Infection / inflammation**
  : pyometra, pneumonia, demodicosis, cystitis, periodontitis
- **Tumors**
  : hemangiosarcoma, lymphoma, nasal adenocarcinoma, cholangiocellular carcinoma
- **Immune-mediated**
  : idiopathic polyarthritis, IMHA, IMT
- **Others**
  : acute pancreatitis, chronic hepatitis, cardiac tamponade, myelodysplastic syndrome

Evaluation Data

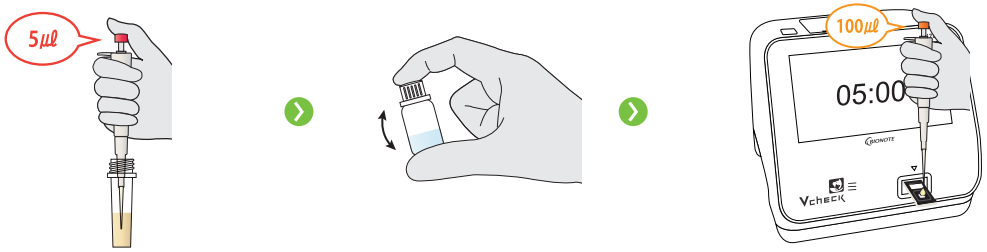


Test Procedure

1 Draw **5 µl** of serum or heparinized plasma and add it into an assay diluent bottle

2 Close the bottle cap and shake for 5-6 times to mix thoroughly

3 Add **100 µl** of mixture in the sample hole of the test device



< 20 mg/L	20~30 mg/L	> 30 mg/L
Normal	Gray zone Systemic inflammation possible Re-evaluation recommended	Abnormal Consistent with inflammation

Product No.	Product Name	Storage Temperature	Packing Unit
VCF109DD	Vcheck Canine CRP 2.0	1~30°C	10 Tests/Kit

Feline SAA 3.0

Serum Amyloid A

Feline real-time inflammation marker

SAA exists at a very low concentration in healthy cats. But it starts to increase 4 hours after inflammatory stimulation such as infection, trauma etc. If there is no further stimulation, the concentration returns to normal within a week. So SAA can be used as a real-time inflammatory marker.

Species	Sample
Cat	Serum/Plasma (heparin) 5 µl
Testing Time	**Measuring Range**
5 min.	5~200 µg/ml

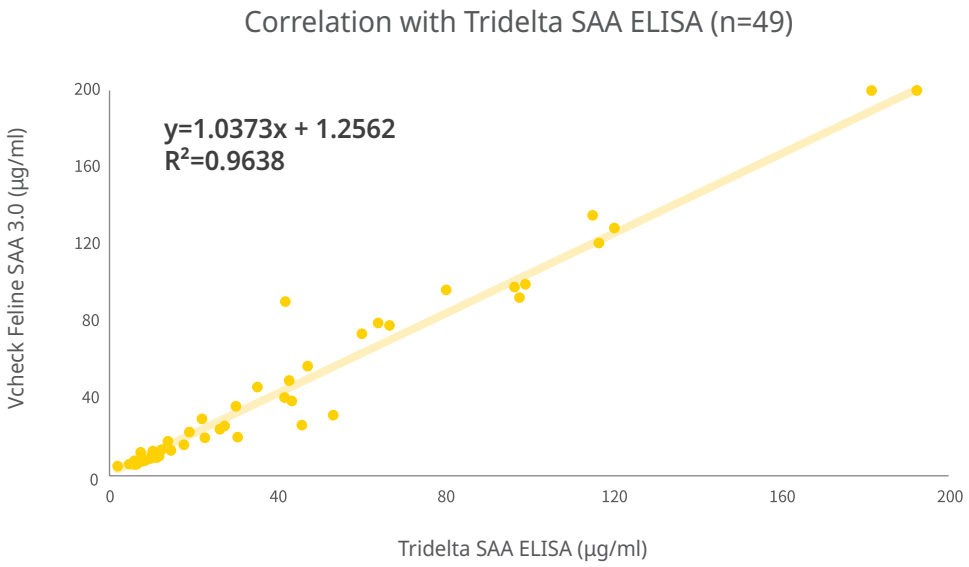
Clinical Application

- Differential diagnosis of diseases
- To evaluate severity of inflammation or infection - proportional to the severity of inflammation
- Differential diagnosis of FIP - SAA level highly increased compared to a feline enteric coronavirus infection
- Continual measurement to monitor disease progression and treatment response
- To evaluate recovery and complication after operations and estimate the time to hospital discharge
- Geriatric health checkup

SAA increases reported in cats

- **Infection / inflammation**
  : acute pancreatitis, Feline Infectious Peritonitis, cholangitis, otitis media
- **Tumors**
  : lymphoma, malignant mesothelioma
- **Immune-mediated**
  : IMHA
- **Others**
  : hyperthyroidism, Diabetes Mellitus, Chronic Kidney Disease

Evaluation Data

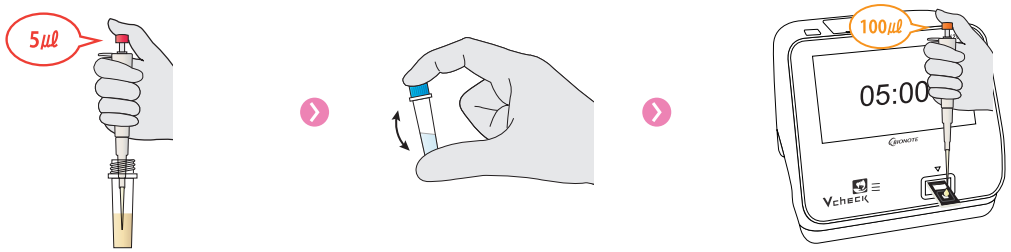


Test Procedure

1 Draw **5 µl** of sample and add it into an assay diluent tube

2 Close the tube cap and shake for 5-6 times to mix thoroughly

3 Add **100 µl** of mixture in the sample hole of the test device



< 5 µg/ml	5~10 µg/ml	> 10 µg/ml
Normal	Gray zone Systemic inflammation possible Re-evaluation recommended	Abnormal

Product No.	Product Name	Storage Temperature	Packing Unit
VCF138DD	Vcheck Feline SAA 3.0	1~30°C	10 Tests/Kit

cPL 2.0

Canine Pancreas-specific Lipase

Canine pancreatitis diagnostic marker

Canine acute pancreatitis is often a life-threatening sudden and serious condition, but early diagnosis and treatment are not easy because the diagnosis is challenging and symptoms are not specific. cPL is considered to be the most specific enzyme that increases in dogs with pancreatitis and measurement of cPL is highly sensitive for a diagnosis of pancreatitis. Also cPL is little affected by other drugs or digestive disorders, thus it is useful for early diagnosis of pancreatitis. Continuous quantitative measurement also helps assess the treatment response of pancreatitis and secondary damage to pancreas caused by other digestive diseases.

Species
Dog

Sample
Serum 25 µl

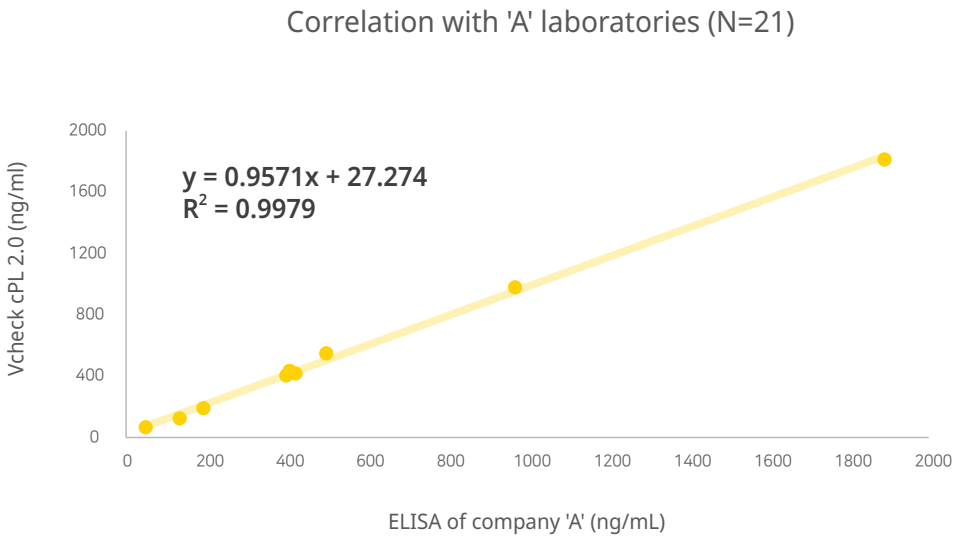
Testing Time
5 min.

Measuring Range
50~2,000 ng/ml

Clinical Application

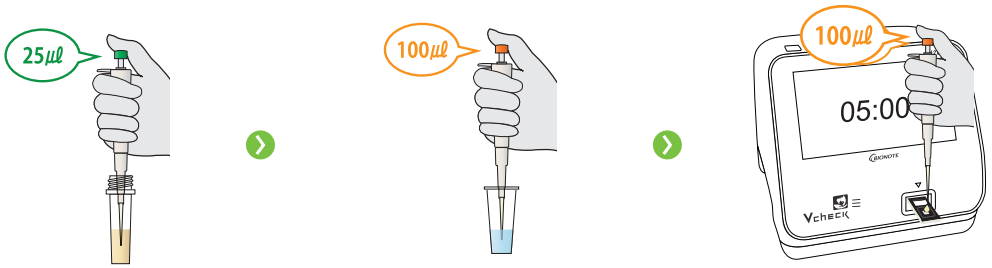
- Clinical signs of acute pancreatitis: abdominal pain, anorexia, vomiting, dehydration, etc.
- Treatment: when considering fluid therapy, analgesics, antiemetics, and antibiotics, etc.
- A specific enzyme released only from pancreas that enables early diagnosis of acute pancreatitis
- To monitor the treatment response by continual testing
- To assess the secondary damage to pancreas in case of other digestive diseases such as cholecystitis or enteritis, etc.
- To evaluate the prognosis by measuring CRP simultaneously

Evaluation Data



Test Procedure

1. Draw **25 µl** of serum and add it into an assay diluent tube
2. Mix well 5-6 times by using a **100 µl** pipetting
3. Add **100 µl** of mixture in the sample hole of the test device



< 200 ng/ml	200~400 ng/ml	> 400 ng/ml
Pancreatitis very unlikely	If clinical signs are present, treat appropriately and perform retest in 2 weeks. If the dog is asymptomatic or with mild symptoms, retesting should be performed after a month.	Consistent with pancreatitis

Product No.	Product Name	Storage Temperature	Packing Unit
VCF129DD	Vcheck cPL 2.0	1~30°C	10 Tests/Kit

fPL 2.0

Feline Pancreas-specific Lipase

A diagnostic marker for feline pancreatitis

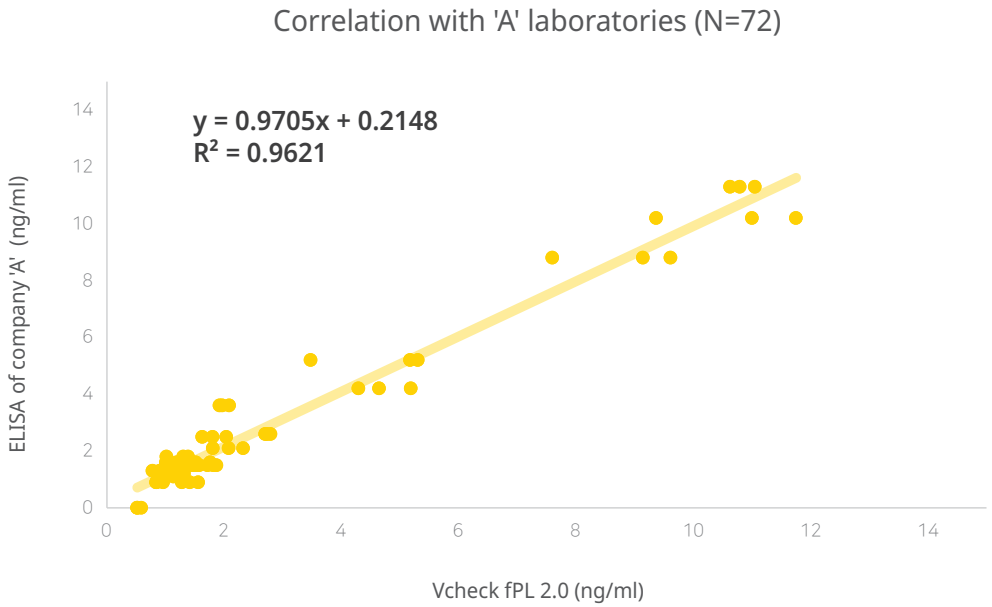
It is more difficult to diagnose feline pancreatitis with routine clinical chemistry tests or diagnostic imaging because the sensitivities and specificities of these diagnostic methods are low. fPL is a pancreas-specific lipase that increases in pancreatitis. Measurement of fPL has the highest sensitivity and likely the highest specificity and is the only reliable test for pancreatitis currently available in cats. Also, It helps to evaluate treatment response by continuous measurement.

Species	Sample
Cat	Serum/Plasma (EDTA) 25 µl
Testing Time	**Measuring Range**
15 min.	1~50 ng/ml

Clinical Application

- Nonspecific clinical signs of pancreatitis: poor or absent appetite, lethargy, weight loss, dehydration, and diarrhea
- Feline pancreas-specific lipase test correlates very well with pancreatic inflammation
- The best overall sensitivity and specificity compared to other serum markers
- To diagnose and rule out feline pancreatitis
- Time-course monitoring of pancreatitis in cats during recovery
- To assess the secondary damage to pancreas in case of other digestive disease such as cholecystitis or enteritis, etc.

Evaluation Data

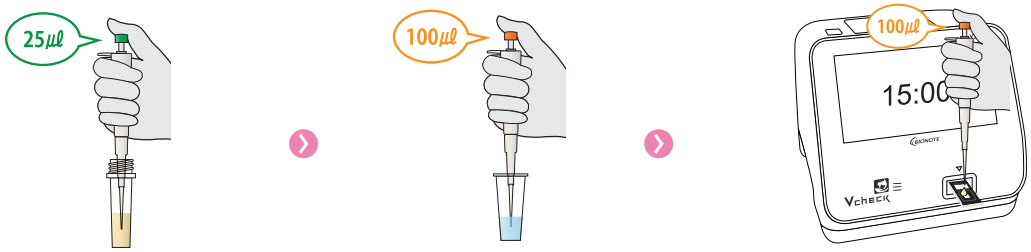


Test Procedure

1 Draw **25 µl** of sample and add it into an assay diluent tube

2 Mix well 5-6 times by using a **100 µl** pipetting

3 Add **100 µl** of mixture in the sample hole of the test device



≤ 3.5 ng/ml	3.6~5.3 ng/ml	≥ 5.4 ng/ml
Pancreatitis very unlikely	If clinical signs are present, treat appropriately and perform retest in 2 weeks. If the cat is asymptomatic or with mild symptoms, retesting should be performed after a month.	Consistent with pancreatitis

Product No.	Product Name	Storage Temperature	Packing Unit
VCF127DD	Vcheck fPL 2.0	1~30°C	10 Tests/Kit

cCortisol

Canine Cortisol

Hormone Marker for hyperadrenocorticism /hypoadrenocorticism

Cortisol is secreted from the adrenal cortex and controls glucose and fat metabolism. In healthy dogs, cortisol concentration is within the normal ranges. But if there is a problem in related organs, the secretion can be excessive or insufficient. Hyperadrenocorticism (Cushing's disease) is one of the most common endocrinopathy in dogs. Measurement of cortisol level through ACTH stimulation test and LDDST, etc. can help to diagnose Cushing's disease.

Species
Dog

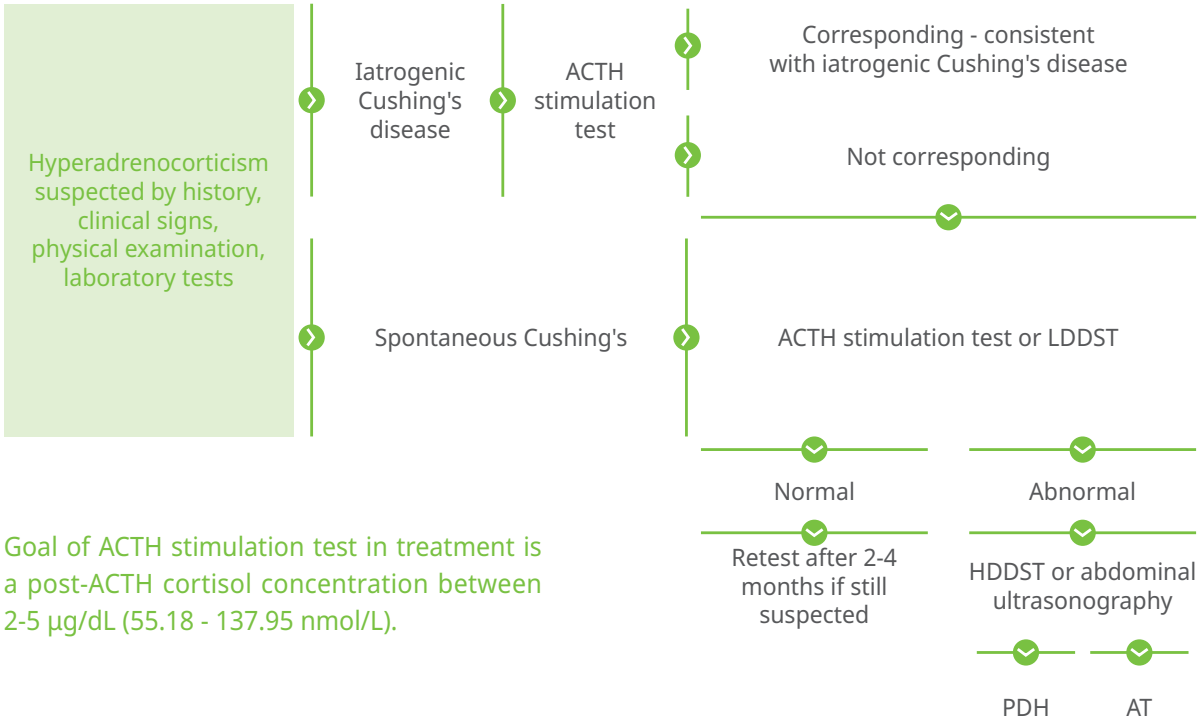
Sample
Serum 50 µl

Testing Time
20 min.

Measuring Range
1~30 µg/dl
(27.59~827.7 nmol/L)

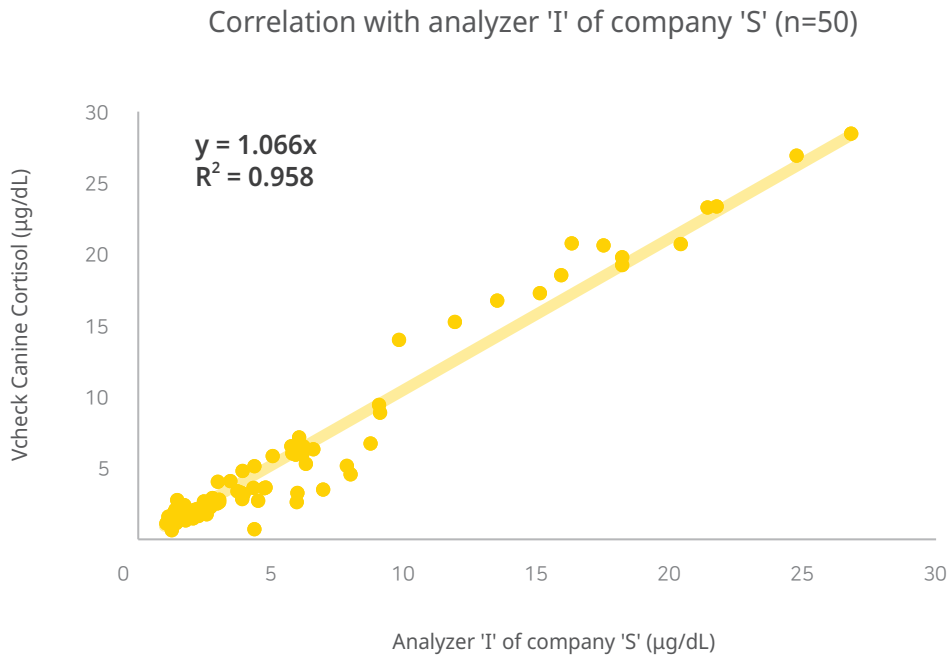
Clinical Application

- To diagnose or evaluate the treatment response of hyperadrenocorticism / hypoadrenocorticism
- Clinical signs of hyperadrenocorticism (Cushing's disease): polyuria/ polydipsia, polyphagia, abdominal distension (pot-belly), etc.
- Long-term treatment monitoring should be performed with Vcheck Cortisol after the initial diagnosis of hyperadrenocorticism / hypoadrenocorticism.
- Clinical signs of hypoadrenocorticism (Addison's disease): lethargy, anorexia, vomiting, etc.



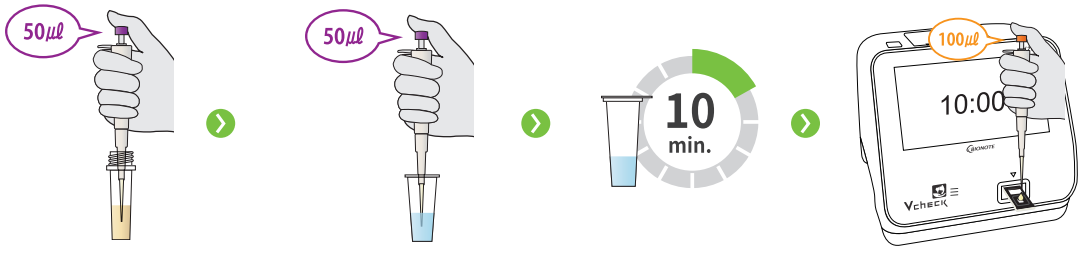
Goal of ACTH stimulation test in treatment is a post-ACTH cortisol concentration between 2-5 µg/dL (55.18 - 137.95 nmol/L).

Evaluation Data



Test Procedure

1. Draw **50 μl** of serum and add it into an assay diluent tube
2. Mix well 5-6 times by using a **50 μl** pipetting
3. Wait 10 minutes for incubation
4. Add **100 μl** of mixture in the sample hole of the test device



Product No.	Product Name	Storage Temperature	Packing Unit
VCF105DD	Vcheck cCortisol	2~8°C	10 Tests/Kit

ACTH stimulation test

- ACTH stimulation test is the gold standard for diagnosis of hypoadrenocorticism, for identification of iatrogenic hyperadrenocorticism, for screening of hyperadrenocorticism and for monitoring of treatment of hyperadrenocorticism. ACTH stimulation test results do not distinguish between PDH and AT.

- Goal of ACTH stimulation test in treatment of Cushing's disease is a post-ACTH cortisol concentration between 2-5 µg/dL (55.18 - 137.95 nmol/L).

Hyperadrenorcorticism or hypoadrenocorticism suspected by clinical signs, CBC, biochemistry, electrolyte test, urinalysis, etc.	Sample collection (serum)	ACTH administration synthetic ACTH IV (5 µg/kg) or ACTH gel IM (2.2 IU/kg, Max 40IU)	Sample collection (serum) after 1 hour (synthetic ACTH) or 2 hours (ACTH gel)	Measurement of cortisol concentration

Pre-ACTH	
< 2 µg/dL (< 55.18 nmol/L)	2-6 µg/dL (55.18 - 165.54 nmol/L)
If pre- and post-ACTH results are < 2 µg/dL (< 55.18 nmol/L), results are consistent with hypoadrenocorticism	Normal

Post-ACTH				
< 2 µg/dL (< 55.18 nmol/L)	2-6 µg/dL (55.18 - 165.54 nmol/L)	6-18 µg/dL (165.54 - 496.62 nmol/L)	18-24 µg/dL (496.62 - 662.16 nmol/L)	> 24 µg/dL (> 662.16 nmol/L)
If both pre- and post-ACTH results are < 2 µg/dL (< 55.18 nmol/L), results are consistent with hypoadrenocorticism	Equivocal Suggestive of iatrogenic hyperadrenocorticism	Normal	Inconclusive	Consistent with hyperadrenocorticism

* 1 µg/dL is equal to 27.59 nmol/L.

Low-Dose Dexamethasone Suppression Test (LDDST)

- Results of LDDST can aid in diagnosing hyperadrenocorticism and discriminating PDH from AT in some cases

Hyperadrenorcorticism suspected by clinical signs, CBC, biochemistry, electrolyte test, urinalysis, etc.	Sample collection (serum) - Baseline	Dexamethasone 0.01 mg/kg IV	Sample collection (serum) after 4 hours and 8 hours from dexamethasone administration	Measurement of cortisol concentration

LDDST						
4-hour	-	1-1.4 µg/dL (27.59 - 38.63 nmol/L)	> 1.4 µg/dL (> 38.63 nmol/L) and > 50% of baseline	< 1.4 µg/dL (< 38.63 nmol/L) or < 50% of baseline	> 1.4 µg/dL (> 38.63 nmol/L) or > 50% of baseline	< 1.4 µg/dL (< 38.63 nmol/L) or < 50% of baseline
8-hour	< 1 µg/dL (< 27.59 nmol/L)	1-1.4 µg/dL (27.59 - 38.63 nmol/L)	> 1.4 µg/dL (> 38.63 nmol/L) and > 50% of baseline	> 1.4 µg/dL (> 38.63 nmol/L) and > 50% of baseline	> 1.4 µg/dL (> 38.63 nmol/L) and < 50% of baseline	> 1.4 µg/dL (> 38.63 nmol/L) and < 50% of baseline
	Normal	Equivocal	Consistent with hyperadrenocorticism	PDH	PDH	PDH

* 1 µg/dL is equal to 27.59 nmol/L.

High-Dose Dexamethasone Suppression Test (HDDST)

- HDDST result can distinguish between PDH and AT in dogs with confirmed spontaneous hyperadrenocorticism. Abdominal ultrasonography can provide valuable information as well.

Patients with confirmed spontaneous hyperadrenocorticism by LDDST or ACTH stimulation test → Sample collection (serum) - Baseline → Dexamethasone with 0.1 mg/kg IV → Sample collection (serum) after 4 hours and 8 hours from dexamethasone administration → Measurement of cortisol concentration

HDDST				
4-hour	< 1.4 μg/dL (< 38.63 nmol/L) or < 50% of baseline	> 1.4 μg/dL (> 38.63 nmol/L) and > 50% of baseline	< 1.4 μg/dL (< 38.63 nmol/L) or < 50% of baseline	> 1.4 μg/dL (> 38.63 nmol/L) and > 50% of baseline
8-hour	> 1.4 μg/dL (> 38.63 nmol/L) and > 50% of baseline	< 1.4 μg/dL (< 38.63 nmol/L) or < 50% of baseline	< 1.4 μg/dL (< 38.63 nmol/L) or < 50% of baseline	> 1.4 μg/dL (> 38.63 nmol/L) and > 50% of baseline
	PDH	PDH	PDH	Additional testing required to differentiate PDH from ATH

* 1 μg/dL is equal to 27.59 nmol/L.

Treatment Monitoring

ACTH stimulation test 10 days after initiating treatment → Goal of ACTH stimulation test: post-ACTH cortisol concentration between 2-5 μg/dL (55.18 - 137.95 nmol/L)

- Within the range → ACTH stimulation test after 1 month, 3 months and every 3 months if maintained
- Out of the range → Observation for side effects, Recheck after dosage adjustment

* 1 μg/dL is equal to 27.59 nmol/L.

T4

Thyroxine

Hormone Marker for canine hypothyroidism and feline hyperthyroidism

T4 is a major thyroid hormone and important for normal regulation of metabolic rates and activity in various organs. Canine hypothyroidism is the common disease related to thyroid function in dogs and feline hyperthyroidism is the most common endocrine disease affecting old cats. T4 concentration level can be used to diagnose these diseases.

Species
Dog, Cat

Sample
Serum 50 µl

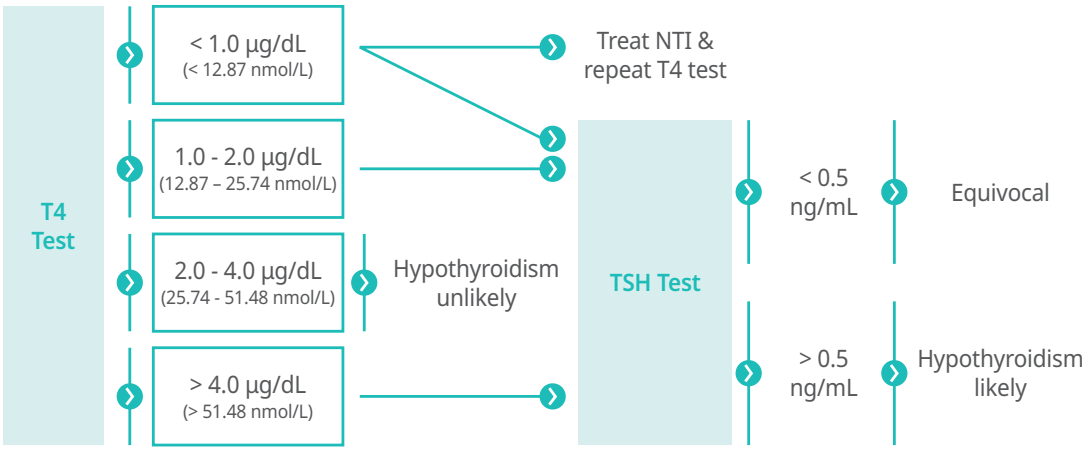
Testing Time
20 min.

Measuring Range
0.5~8 µg/dl
(6.44~102.96 nmol/L)

Clinical Application

· Diagnosis of hypothyroidism/hyperthyroidism and treatment monitoring

<Canine Hypothyroidism>

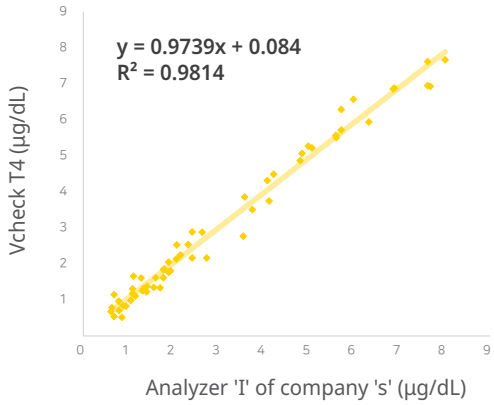


<Feline Hyperthyroidism>

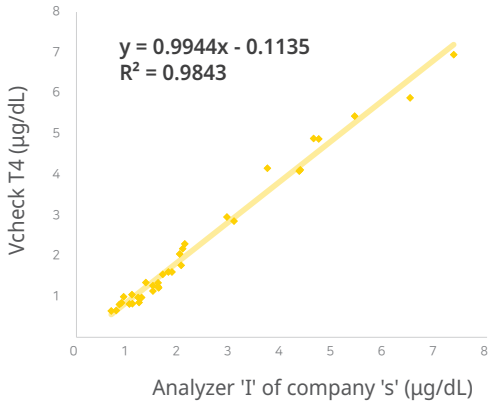
The prognosis of hyperthyroidism and hypothyroidism is excellent as long as they are diagnosed at early stage and the patients are treated and managed appropriately.

Evaluation Data

Correlation with analyzer 'I' of company 'S' Canine (n=58)

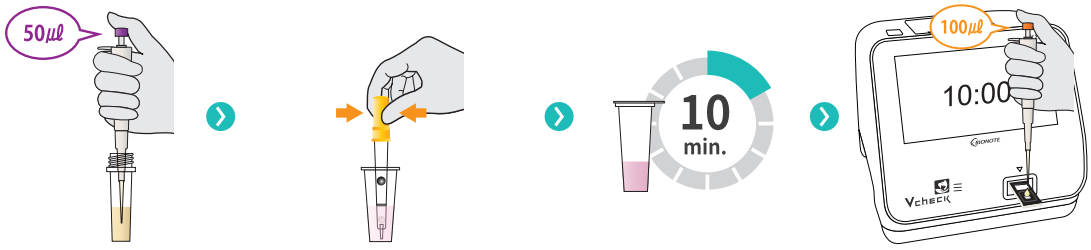


Correlation with analyzer 'I' of company 'S' Feline (=34)



Test Procedure

1. Draw **50 µl** of serum and add it into an assay diluent tube
2. Mix over 8 times using a disposable tablet pipette until the tablet is completely dissolved
3. Wait 10 minutes for incubation
4. Add **100 µl** of mixture in the sample hole of the test device



Dog

< 1.0 µg/dL (< 12.87 nmol/L)	1.0~2.0 µg/dL (12.87 – 25.74 nmol/L)	1.0~4.0 µg/dL (12.87 - 51.48 nmol/L)	> 4 µg/dL (> 51.48 nmol/L)
Low	Low normal	Normal	High

Cat

< 0.8 µg/dL (< 10.30 nmol/L)	0.8~4.7 µg/dL (10.30 – 60.49 nmol/L)	2.3~4.7 µg/dL (29.60 – 60.49 nmol/L)	> 4.7 µg/dL (> 60.49 nmol/L)
Low	Normal	Gray zone	Consistent with hyperthyroidism

* 1 µg/dL is equal to 12.87 nmol/L.

Product No.	Product Name	Storage Temperature	Packing Unit
VCF106DD	Vcheck T4	2~8°C	10 Tests/Kit

cTSH

Thyroid-Stimulating Hormone

Hormone marker for canine hypothyroidism

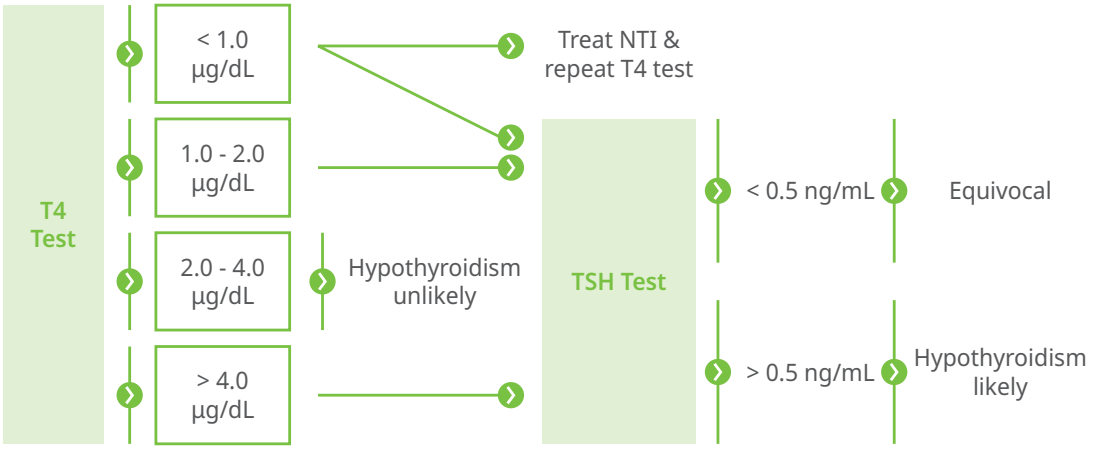
TSH is a glycoprotein produced by the anterior pituitary gland. Through its action on the thyroid gland, it plays a major role in maintaining normal circulating levels of the thyroid hormones, T4 and T3. Hypothyroidism is considered to be a common endocrine disorder in dogs, whereas hyperthyroidism in this species is rarely seen. Serum TSH is usually measured in dogs with nondiagnostic serum T4 test results, severe nonthyroidal illness, or both, and is a common component of canine thyroid panels.

Species	Sample
Dog	Serum 100 µl
Testing Time	**Measuring Range**
15 min.	0.25~5.00 ng/ml

Clinical Application

Diagnosis of canine hypothyroidism

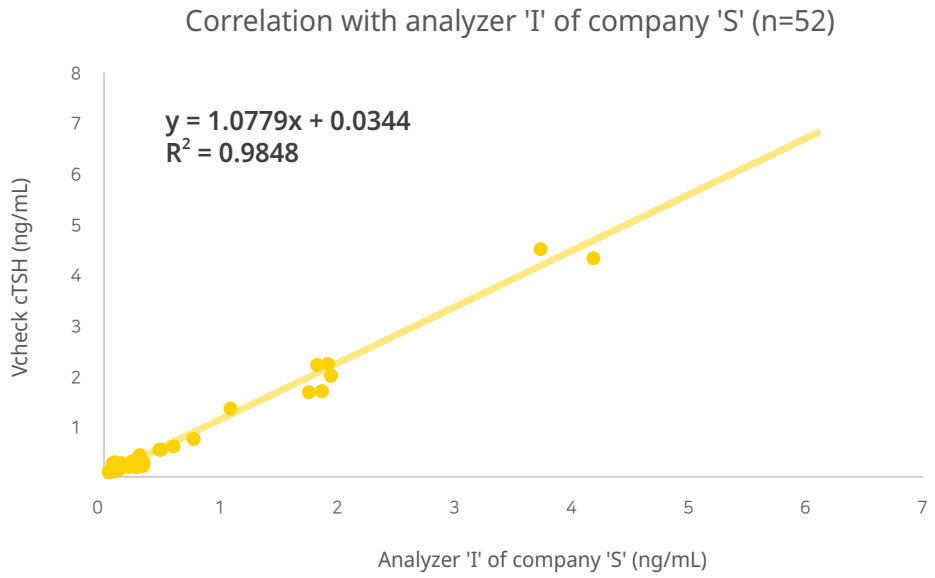
- Most cases of canine hypothyroidism are primary in nature, involving impaired production of the thyroid hormones, T4 and T3. In this condition, elevated TSH levels are expected. Secondary or tertiary hypothyroidism, where thyroid hormone production is low as a consequence of hypothalamic or pituitary disease, is believed to account for less than 5% of canine hypothyroidism cases. And in these conditions, lowered levels of TSH would be expected.
- Serum TSH test results should always be interpreted in conjunction with results of serum T4, fT4, or both and should not be used alone in the diagnosis of hypothyroidism.



Therapeutic monitoring of canine hypothyroidism

- Serum TSH concentrations are typically evaluated 4 to 6 hours after administration of levothyroxine in dogs. Ideally, the serum TSH concentration should be in the reference range.

Evaluation Data

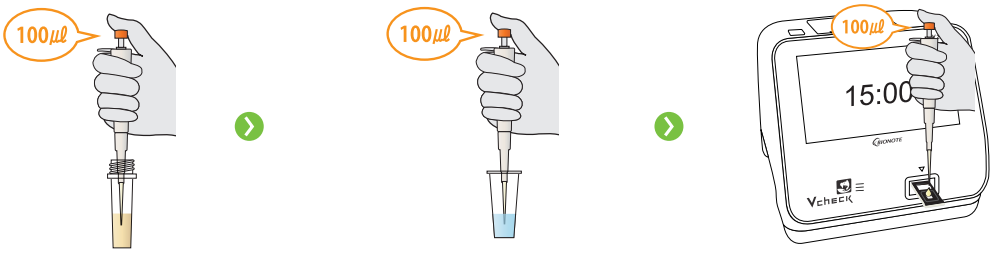


Test Procedure

1 Draw **100 µl** of serum and add it into an assay diluent tube

2 Mix well 5-6 times by using a **100 µl** pipetting

3 Add **100 µl** of mixture in the sample hole of the test device



< 0.5 ng/mL	≥ 0.5 ng/mL
Normal	High

Product No.	Product Name	Storage Temperature	Packing Unit
VCF118DC	Vcheck cTSH	2~8°C	5 Tests/Kit

cProgesterone

Canine Progesterone

Hormone

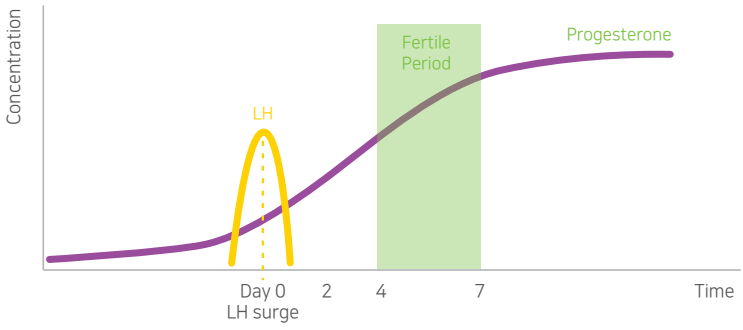
Progesterone is a steroid hormone produced primarily by the corpora luteum. Progesterone testing is used to determine when a bitch ovulates and thus when to breed. It also helps determine the timing of elective C-sections in pregnant dogs.

Species	Sample
Dog	Serum 50 µl
Testing Time	**Measuring Range**
15 min.	1.0~30.0 ng/mL (3.18~95.40 nmol/L)

Clinical Application

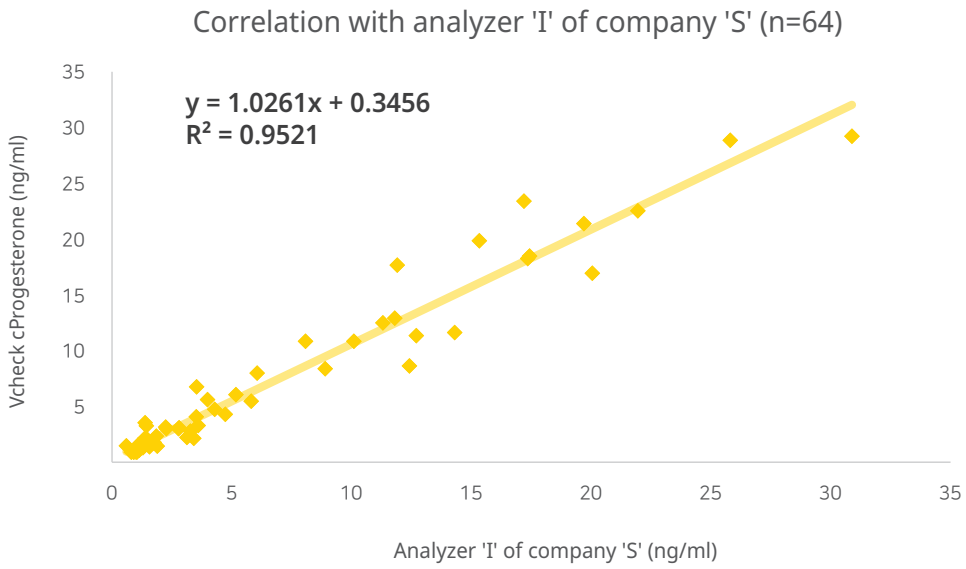
- To determine optimal breeding dates
- To predict parturition dates or time a Cesarean section
- To detect reproductive disorders such as split heats, delayed puberty, silent estrus or hypoluteidism

Peak fertility typically occurs 4-7 days after the LH surge (or 2-5 days after ovulation)



- Natural breeding : Ideally breed every other day while the female is showing signs of standing heat. If only 2 matings will be performed, attempt to breed 4 and 6 days after the progesterone predicted LH surge.
- Fresh or chilled semen : Ideally inseminate 3 and 5 days after the progesterone predicted LH surge.

Evaluation Data



Test Procedure

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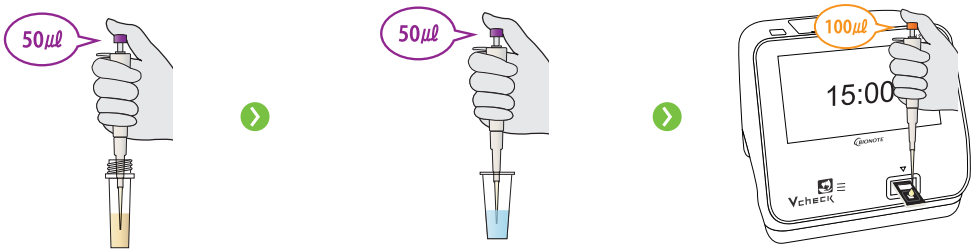
2. Mix well 5-6 times by using a **50 µl** pipetting
3. Add **100 µl** of mixture in the sample hole of the test device



< 1.0 ng/mL (< 3.18 nmol/L)	1.0 – 1.99 ng/mL (3.18 – 6.33 nmol/L)	2.0 – 2.99 ng/mL (6.36 – 9.51 nmol/L)	3.0 – 4.99 ng/mL (9.54 – 15.87 nmol/L)	5.0 – 12.0 ng/mL (15.90 – 38.16 nmol/L)	> 12.0 ng/mL (> 38.16 nmol/L)
Anestrus or proestrus	Pre-LH surge	LH surge	Post-LH surge, Pre-ovulation	Ovulation (It may vary with breed and size.)	Post-ovulation

* 1 ng/ml is equal to 3.18 nmol/L.

Product No.	Product Name	Storage Temperature	Packing Unit
VCF122DD	Vcheck cProgesterone	2~8°C	10 Tests/Kit

Equine SAA

Serum Amyloid A

Equine real-time inflammation marker

SAA concentration increases in response to several clinical conditions in horses, and its measurement is useful for monitoring the response to treatment. Vcheck Equine SAA assay allows early detection of the presence of inflammation, monitors the post-operative effects and recovery, and serial monitoring of the response to treatment.

Species	Sample
Horse	Serum/Plasma (Heparin) 5 µl
Testing Time	**Measuring Range**
5 min.	10~1,000 mg/L

Clinical Application

Early detection of the presence of inflammation

- SAA increases in the early stage of inflammation, enabling early detection of inflammation before clinical symptoms appear.

Monitoring the post-operative effects and recovery

- SAA is useful for monitoring the occurrence of post-operative complications or relapse, and monitoring herd health.

Serial monitoring of the response to treatment

- SAA concentrations increase rapidly in response to inflammation and rapidly decline after the resolution of inflammation.

SAA increases reported in horses

Infection

- Bacterial: Sepsis, abscesses, strangles
- Viral: Equine herpesvirus-1 (EHV-1), Equine influenza virus (EIV)

Reproductive disease

- Septic abortion
- Abortion of unknown aetiology

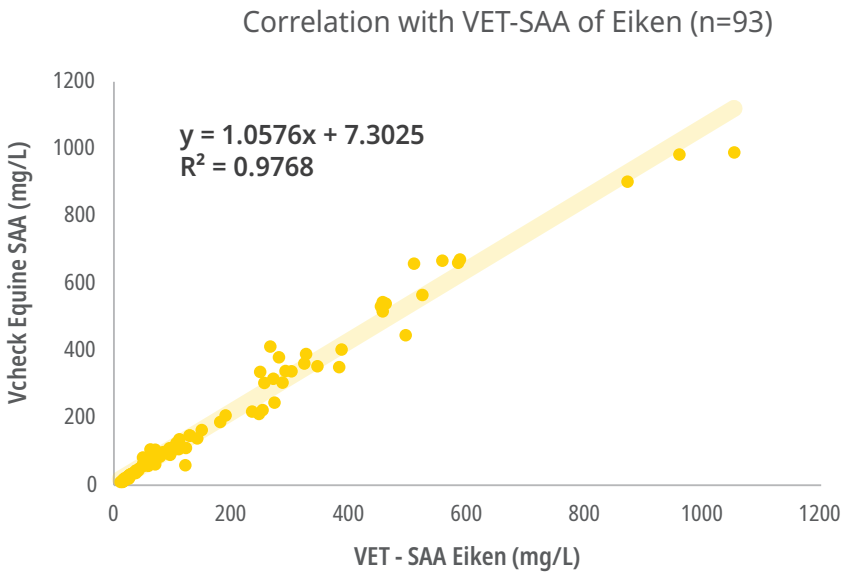
Gastrointestinal disease

- Diarrhoea and enteritis (foal)
- Colic (adult horse)

Joint disease

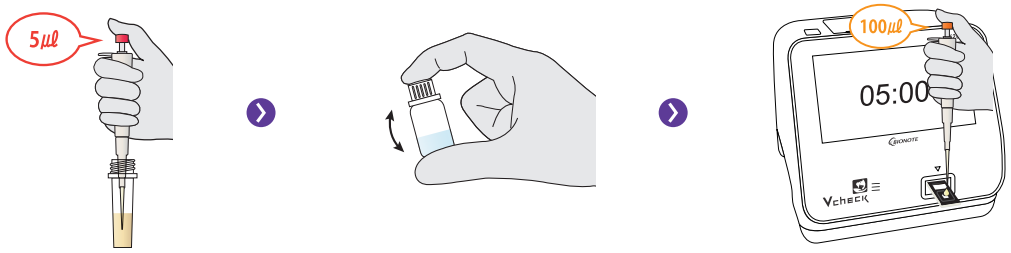
- Aseptic arthritis
- Infectious arthritis

Evaluation Data



Test Procedure

1. Draw **5 µl** of sample and add it into an assay diluent bottle
2. Close the bottle cap and shake for 5-6 times to mix thoroughly
3. Add **100 µl** of mixture in the sample hole of the test device



< 10 mg/L	10 ~ 20 mg/L	> 20 mg/L
Normal	Gray zone	Abnormal

Product No.	Product Name	Storage Temperature	Packing Unit
VCF141DD	Vcheck Equine SAA	2~8°C	10 Tests/Kit

eProgesterone

Equine Progesterone

Hormone

Progesterone plays a crucial role in the maintenance of pregnancy until 120 days of gestation when the placenta becomes the main source. In addition, measuring progesterone helps find out mare's reproductive cycle and plan most effectively. Vcheck eProgesterone assay allows you to quickly analyze Equine progesterone in the field, evaluate corpus luteum in the early stages of pregnancy, and monitor progesterone during pregnancy.

Species	Sample
Horse	Serum/Plasma (Heparin) 50 µl
Testing Time	**Measuring Range**
15 min.	1~30 ng/ml (3.18~95.4 nmol/L)

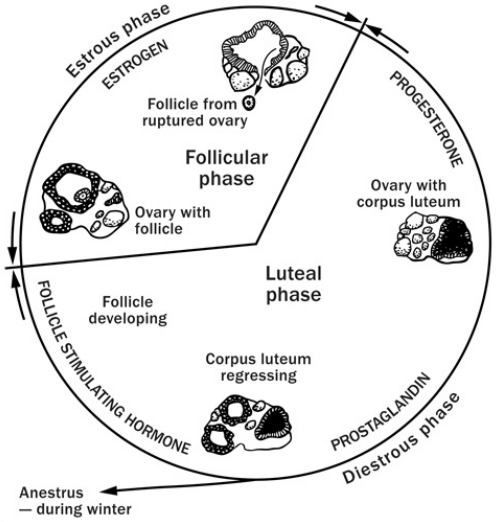
Clinical Application

In pregnant mares

- To evaluate the maintenance of early pregnancy (Day 21~45)
- To monitor endogenous progesterone production in mares treated with supplemental hormones

In non-pregnant mares

- To diagnose and treat the acyclic or irregularly cyclic mare (functional luteal tissue) (Day 21~)

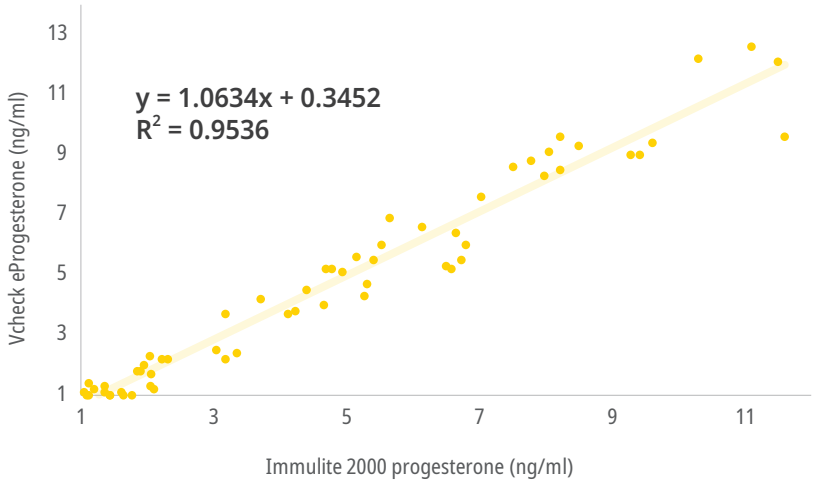


The estrous cycle [1]

Reference : 1. Anatomy, physiology and reproduction in the mare. 2010, https://www.ontario.ca/page/anatomy-physiologyand-reproduction-mare

Evaluation Data

Correlation with Immulite 2000 of Siemens (n=61)

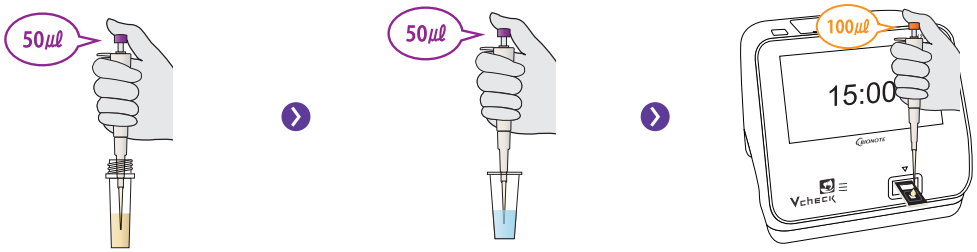


Test Procedure

1 Draw **50 µl** of the sample and add it into an assay diluent tube

2 Mix well 5-6 times by using a **50 µl** pipetting

3 Add **100 µl** of mixture in the sample hole of the test device



≤ 2 ng/ml (≤ 6.36 nmol/L)	> 2 ng/ml (> 6.36 nmol/L)
Low	High (gestation)

* 1 ng/ml is equal to 3.18 nmol/L.

Product No.	Product Name	Storage Temperature	Packing Unit
VCF142DC	Vcheck eProgesterone	2~8°C	5 Tests/Kit

Foal IgG

Immunoglobulin G

Immunoglobulin G (IgG) in foal

The Vcheck Foal IgG is an *in vitro* diagnostic test kit for the quantitative measurement of immunoglobulin G (IgG) concentration in equine serum or plasma. The measurement of equine IgG concentration serves as a sensitive marker for determining the adequacy of passive immunity transfer. A foal with a low IgG concentration is considered to have experienced a failure in transfer of passive immunity (FTPI), leaving it susceptible to infectious diseases and mortality. Therefore, assessing the equine IgG concentration is a valuable diagnostic tool for determining the presence of sufficient IgG levels.

Species
Horse

Sample
Serum or Plasma (EDTA) 5 µl

Testing Time
5 min.

Measuring Range
100~1,000 mg/dL

Clinical Application

If a foal fails to consume an adequate amount of high-quality colostrum within 24 hours, its IgG levels will be low, increasing the risk of severe infections. Thus, measuring IgG levels is crucial in evaluating the health of both sick and outwardly healthy neonatal foals.

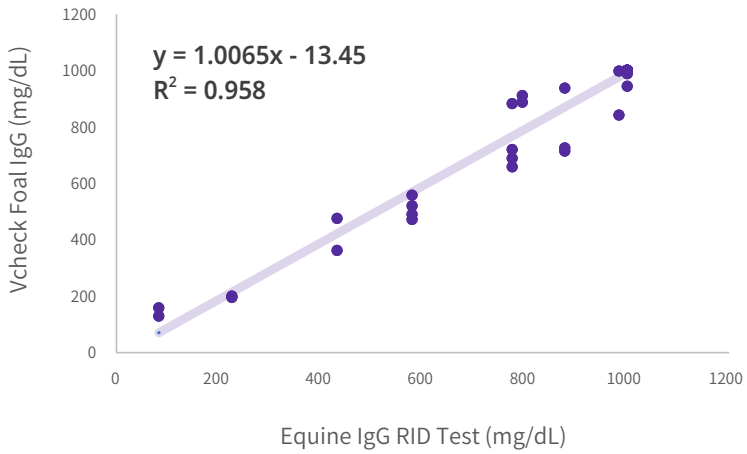
Vcheck F Provides

- Assess the immune level of a neonatal foal
- Evaluate the quality of the mare's colostrum after foaling
- Monitor the immune level serially after treatment

Evaluation Data

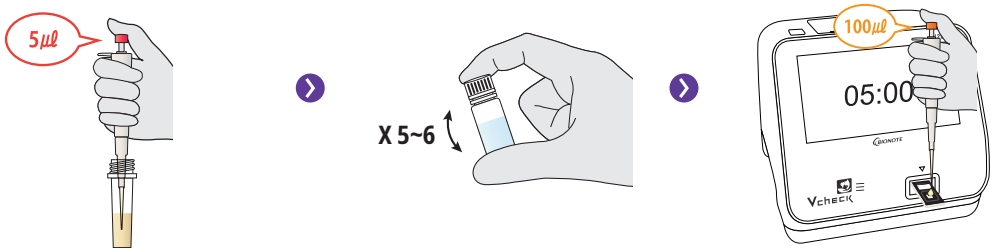
Vcheck Foal IgG has a strong correlation (y=1.0065x - 13.45, **R^2=0.958**) with the reference method (Equine IgG RID), which has been used in reference laboratories

Correlation with Equine IgG RID Test



Test Procedure

1. Add **5 µl** of serum or plasma (EDTA) to the assay diluent bottle
2. Close the bottle cap and shake for 5-6 times to mix thoroughly
3. Add **100 µl** of mixture in the sample hole of the test device



< 400 mg/dL	400 ~ 800 mg/dL	> 800 mg/dL
Failure of passive transfer in foal	Partial failure of passive transfer in foal	Successful passive transfer in foal

Product No.	Product Name	Storage Temperature	Packing Unit
VCF143DC	Vcheck Foal IgG	2~30°C	5 Tests/Kit

Vcheck Inf.

Infectious Test

Infectious disease test

Canine and feline infectious diseases can be diagnosed rapidly and precisely.

Specification

- Read the results within 10 minutes.
- Reading the RAPID test results visually can lead to ambiguous interpretation, especially for samples that have low levels of analyte. With Vcheck analyzer, a more precise and objective result is produced for better diagnosis.
- Besides positive/negative result, COI value can help estimate the relative amount of antigen (The higher the COI value, the more antigen is present).

Products

Dog	Canine Distemper Virus Antigen Vcheck CDV Ag	Sample Conjunctival swab, Urine, Serum or Plasma
	Canine Parvo Virus Antigen Vcheck CPV Ag	Sample Feces
	Canine Parvo/Corona Virus Antigen Vcheck CPV/CCV Ag (3 lines)	Sample Feces
	Canine Heartworm Antigen Vcheck CHW Ag	Sample Whole blood, serum or plasma
Cat	Feline Panleukopenia Virus Antigen Vcheck FPV Ag	Sample Feces

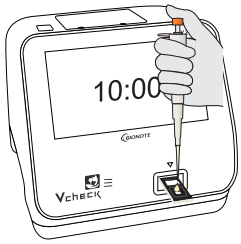
Evaluation Data

	Vcheck CDV Ag	Vcheck CPV Ag	VcheckCHW Ag	Vcheck FPV Ag
Sensitivity	98.8 %	100 %	99.5 %	97 %
Specificity	97.7 %	100 %	94.0 %	98.5 %

Test Procedure

Incubate and Read

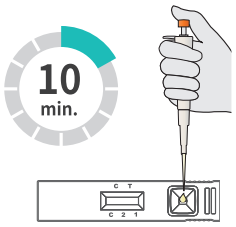
1. Insert the test device into Vcheck analyzer and add the sample mixture into the sample hole of the device
2. After 10 mins test device will read automatically
3. Read the result

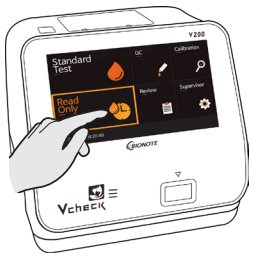


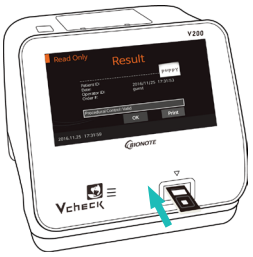
Positive(+), COI ≥1
Negative(-), COI < 1

Read Only

1. Add the sample mixture into the sample hole of the test device and wait 10 minutes
2. Select 'Read Only'
3. Insert the device into Vcheck analyzer and read the result







Product No.	Product Name	Storage Temperature	Packing Unit
VCF111DD	Vcheck CDV Ag	2~30°C	10 Tests/Kit
VCF112DD	Vcheck CPV Ag	2~30°C	10 Tests/Kit
VCF114DD	Vcheck CPV/CCV Ag	2~30°C	10 Tests/Kit
VCF117DD	Vcheck CHW Ag	2~30°C	10 Tests/Kit
VCF113DD	Vcheck FPV Ag	2~30°C	10 Tests/Kit

Vcheck Ab

Antibody Titer Test

Antibody Titer Test

Immune status after core vaccination can be evaluated through the antibody titer test.

Species
Dog, Cat

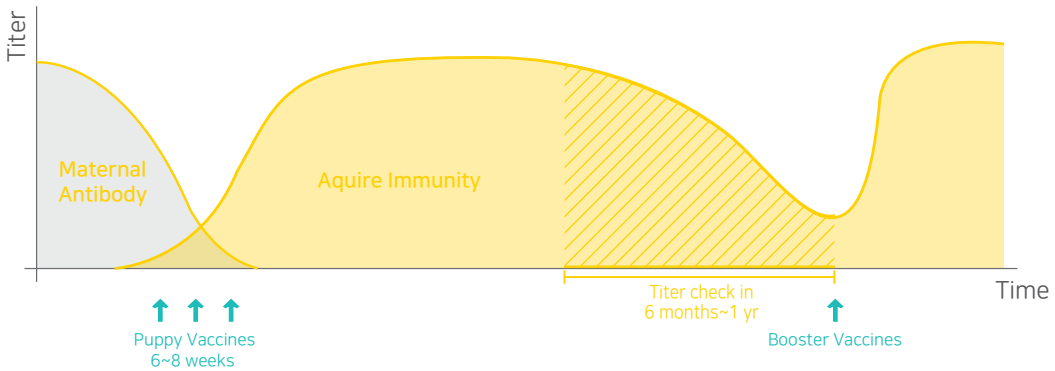
Sample
Serum, Plasma 5 µl

Testing Time
10 min.

Measuring Range
Semi-quantitative

Clinical Application

- To evaluate immune status after vaccination
- To optimize the primary vaccination protocol in consideration of maternally-derived antibody
- To schedule revaccination properly
- To aid serological test and monitor treatment response



Evaluation Data

Vcheck CPV Ab	Compared with HI test (gold standard)	Sensitivity 100%	Specificity 85.7%
Vcheck CDV Ab	Compared with VN test (gold standard)	Sensitivity 100%	Specificity 83.1%
Vcheck CAV Ab	Compared with VN test (gold standard)	Sensitivity 87.8%	Specificity 98.2%
Vcheck FHV Ab	Compared with VN test (gold standard)	Sensitivity 100%	Specificity 91.5%
Vcheck FPV Ab	Compared with HI test (gold standard)	Sensitivity 100%	Specificity 95.2%
Vcheck FCV Ab	Compared with VN test (gold standard)	Sensitivity 92.7%	Specificity 85.3%

Test Procedure

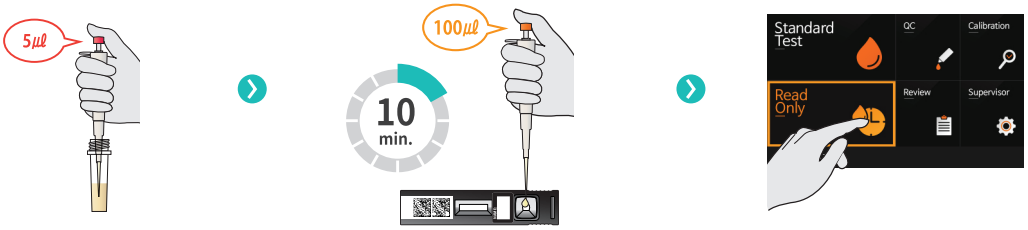
Standard Test

1. Add **5 µl** of the sample to the assay diluent tube
2. Select "Standard Test" and insert the test device into the Vcheck analyzer
3. Mix well 5-6 times and add **100 µl** of the mixed sample to the sample hole of the test device

Read Only

***The 'Read Only' mode is more suitable when three antibodies are tested at once.**

1. Add **5 µl** of the sample to the assay diluent tube
2. Mix well 5-6 times and add **100 µl** of the mixed sample to the sample hole of the test device and incubate for 10 min.
3. Select "Read Only" and insert the test device into the Vcheck analyzer



Test results	Titer (Gold standard)		Immune status
Negative(0) Low Titer(1) Low Titer(2)	CPV - HI below 1:40 CDV - VN below 1:16 CAV - VN below 1:8	FHV – VN below 1:8 FPV – HI below 1:40 FCV – VN below 1:16	Poor immune status (vaccination required)
Medium Titer (3) Medium Titer (3.5)	CPV - HI 1:80 ~ 1:120 CDV - VN 1:32 ~ 1:48 CAV - VN 1:16 ~ 1:32	FHV - VN 1:16 ~ 1:24 FPV - HI 1:80 ~ 1:120 FCV - VN 1:32 ~ 1:48	Protective immunity
High Titer(4) High Titer(4.5) High Titer(5) High Titer(5.5) High Titer(6)	CPV - HI above 1:160 CDV - VN above 1:64 CAV - VN above 1:64	FHV – VN above 1:32 FPV – HI above 1:160 FCV – VN above 1:64	Well with protective immunity

Product No.	Product Name	Storage Temperature	Packing Unit
VCF115DD	Vcheck CDV Ab	2~30°C	10 Tests/Kit
VCF116DD	Vcheck CPV Ab	2~30°C	10 Tests/Kit
VCF126DD	Vcheck CAV Ab	2~30°C	10 Tests/Kit
VCF119DD	Vcheck FHV Ab	2~30°C	10 Tests/Kit
VCF120DD	Vcheck FPV Ab	2~30°C	10 Tests/Kit
VCF121DD	Vcheck FCV Ab	2~30°C	10 Tests/Kit

Current available product list

Vcheck F

Analyzer

	Cat. No.	Product	Packing size	Description	Operating Conditions
Analyzer	VC7402EA	Vcheck V200	1 EA	Fluorescent immunoassay analyzer suitable for hospitals of various sizes with a convenient user interface	15~30°C
	VC7403EA	Vcheck V2400	1 EA	Fluorescent immunoassay analyzer suitable for large hospitals and laboratories that can perform 24 items of tests at the same time	15~30°C

Reagent

Species	Cat. No.	Product	Packing size	Description	Sample
	VCF132DC	Vcheck Canine NT-proBNP	5 Tests/Kit	Quantitative measurement of N-terminal pro-B type natriuretic peptide (NT-proBNP)	Serum
	VCF137DC	Vcheck Canine TnI	5 Tests/Kit	Quantitative measurement of Cardiac troponin I	Serum
	VCF107DC	Vcheck D-dimer	5 Tests/Kit	Quantitative measurement of canine D-dimer	Plasma (sodium citrate)
	VCF109DD	Vcheck cCRP 2.0	10 Tests/Kit	Quantitative measurement of C-reactive protein(CRP)	Serum, Plasma (heparin)
	VCF129DD	Vcheck cPL 2.0	10 Tests/Kit	Quantitative measurement of Canine pancreas-specific lipase	Serum
	VCF105DD	Vcheck cCortisol	10 Tests/Kit	Quantitative measurement of Canine cortisol	Serum
	VCF118DC	Vcheck cTSH	5 Tests/Kit	Quantitative measurement of canine TSH	Serum
	VCF122DD	Vcheck cProgesterone	10 Tests/Kit	Quantitative measurement of canine Progesterone	Serum
	VCF111DD	Vcheck CDV Ag	10 Tests/Kit	Detection of Canine Distemper virus antigen	Conjunctival swab, Urine, Plasma or Serum
	VCF112DD	Vcheck CPV Ag	10 Tests/Kit	Detection of Canine Parvovirus antigen	Feces
	VCF114DD	Vcheck CPV/CCV Ag (3 lines)	10 Tests/Kit	Detection of Canine Parvovirus & Canine Coronavirus antigen	Feces
	VCF117DD	Vcheck CHW Ag	10 Tests/Kit	Detection of Canine Heartworm antigen	Whole blood, Plasma or Serum
	VCF116DD	Vcheck CPV Ab	10 Tests/Kit	Titration of Canine Parvovirus antibody	Serum, Plasma
	VCF115DD	Vcheck CDV Ab	10 Tests/Kit	Titration of Canine Distemper virus antibody	Serum, Plasma
	VCF126DD	Vcheck CAV Ab	10 Tests/Kit	Titration of Canine Adenovirus antibody	Serum, Plasma
	VCF130DC	Vcheck Feline NT-proBNP	5 Tests/Kit	Quantitative measurement of N-terminal pro-B type natriuretic peptide (NT-proBNP)	Serum
	VCF139DC	Vcheck Feline TnI	5 Tests/Kit	Quantitative measurement of Cardiac troponin I	Serum
	VCF138DD	Vcheck fSAA 3.0	10 Tests/Kit	Quantitative measurement of feline Serum Amyloid A (SAA)	Serum, Plasma (heparin)
	VCF127DD	Vcheck fPL 2.0	10 Tests/Kit	Quantitative measurement of Feline pancreas-specific lipase	Serum, Plasma (EDTA)
	VCF113DD	Vcheck FPV Ag	10 Tests/Kit	Detection of Feline Panleukopenia virus antigen	Feces
	VCF119DD	Vcheck FHV Ab	10 Tests/Kit	Titration of Feline Herpesvirus antibody	Serum, Plasma
	VCF120DD	Vcheck FPV Ab	10 Tests/Kit	Titration of Feline Panleukopenia virus antibody	Serum, Plasma
	VCF121DD	Vcheck FCV Ab	10 Tests/Kit	Titration of Feline Calicivirus antibody	Serum, Plasma
	VCF147DD	Vcheck SDMA 2.0	10 Tests/Kit	Quantitative measurement of Symmetric dimethylarginine (SDMA)	Serum, Plasma (heparin)
	VCF106DD	Vcheck T4	10 Tests/Kit	Quantitative measurement of T4 (thyroxine)	Serum
	VCF142DC	Vcheck eProgesterone	5 Tests/Kit	Quantitative measurement of equine Progesterone	Serum, Plasma (heparin)
	VCF141DD	Vcheck Equine SAA	10 Tests/Kit	Quantitative measurement of equine Serum Amyloid A (SAA)	Serum, Plasma (heparin)
	VCF143DC	Vcheck Foal IgG	5 Tests/Kit	Quantitative measurement of foal Immunoglobulin G (IgG)	Serum, Plasma (EDTA)

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