

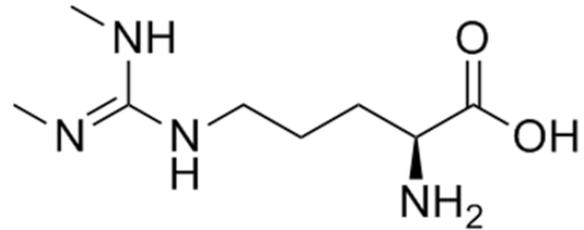
Vcheck SDMA

A new biomarker for renal function



What is SDMA?

SDMA (Symmetric Dimethylarginine) is a methylated form of the amino acid arginine physiologically produced in the body when the methylated proteins are degraded. SDMA is released into blood during protein degradation and highly stable in serum and plasma.



Why do we need SDMA?

BIOMARKER FOR RENAL FUNCTION

SDMA primarily eliminated by renal excretion,¹ and has a [strong correlation with GFR](#) in cats and dogs.^{2,3,4} SDMA is a promising biomarker for early detection of Acute Kidney Injury (AKI) and Chronic Kidney Disease (CKD).^{2,3,5}

MORE SENSITIVE

Creatinine remains in the normal reference interval until GFR is decreased approximately 75%.⁶ SDMA increases when there is a 40% decrease and as little as 25% decrease in GFR.² **SDMA increases earlier than creatinine** by 17 months in cats with CKD and 9.8 months in dogs with CKD on average.^{2,5}

MORE SPECIFIC

SDMA is less affected by extrarenal factors like body condition, age, breed, sex, exercise or disease state.^{7,8,9} SDMA is also not influenced by lean body mass, which makes it more reliable for evaluating renal function in animals with diseases that result in weight and muscle loss, such as hyperthyroidism.⁹

SDMA is a more reliable biomarker for kidney disease than creatinine because it increases earlier than creatinine in cats and dogs with renal disease and it is also not influenced by lean body mass as creatinine is.

How is SDMA different from traditional renal biomarkers?

Creatinine

Creatinine concentrations are influenced by lean body mass and age, which limits creatinine utility as a biomarker for monitoring renal function.⁹ SDMA concentrations increases earlier than creatinine concentration in cats and dogs with both Acute Kidney Injury and Chronic Kidney Disease.^{2,3,5} Using SDMA as a biomarker for CKD allows earlier detection of kidney dysfunction than does measurement of creatinine.⁵

BUN (Blood Urea Nitrogen)

An increase in BUN concentration can be observed after at least 75% of the nephrons are not functioning. And BUN concentrations can be affected by diets, gastrointestinal bleeding, hepatic diseases, increased catabolism (e.g. starvation, infection, fever) or certain drugs. These non-renal variables limit the usefulness of BUN as an indicator of the GFR.¹⁰

SDMA is a more reliable marker to evaluate renal function. However, creatinine and BUN are still complementary to SDMA in evaluation of kidney function. Investigation of a patient for renal disease should consist of history, physical examination, minimum database, including CBC, chemistry profile and electrolytes, and complete urinalysis.

How often do we face with kidney disease?

The prevalence of renal diseases has been reported up to 7% in dogs and 20% in cats.^{11,12}



may suffer from renal diseases in their lifetime.

Hyperthyroidism is the most common endocrine disease of aged cats and may be observed concurrently with CKD. Based on several studies, the reported prevalence of pre-existing CKD in hyperthyroid cats ranges from 14 – 40%.¹³

In geriatric cats, the prevalence of CKD is estimated up to 81%.¹⁴

Vcheck SDMA

Specifications

- Species : Dog, Cat
- Sample : Serum or Plasma (heparin) 100 μ l
- Testing Time : 11 minutes
- Measurement Range : 10.0 – 100.0 μ g/dL
- Storage Condition : 2 – 8°C

- **International PCT patent application**



Reference Ranges

| ≤ 14 μ g/dL | 14.1 – 19.9 μ g/dL | ≥ 20 μ g/dL |
|---|--|-------------------------|
| Normal (≤ 16 μ g/dL in puppies*) | Elevated (Check other evidence of kidney disease) | Kidney disease probable |

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

Applications

- Diagnosis of Acute Kidney Injury and Chronic Kidney Disease
- Staging of Chronic Kidney Disease
- Monitoring of patients with renal disease
- Regular check-up : early screening of renal dysfunction
- Pre-anesthetic examination

Monitoring of patients with diseases which can result in decreased kidney function

- Cardiac disease
- Pancreatitis
- Sepsis
- Feline hyperthyroidism
- Hypertension
- Diabetes mellitus
- Asthma, etc.

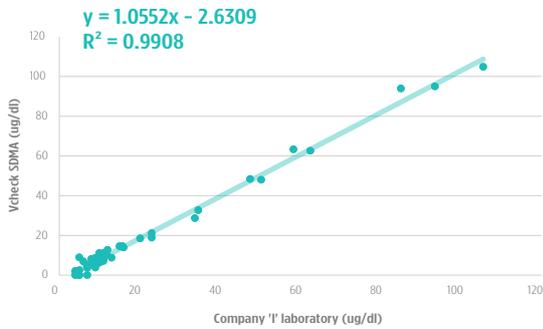


Ordering Information

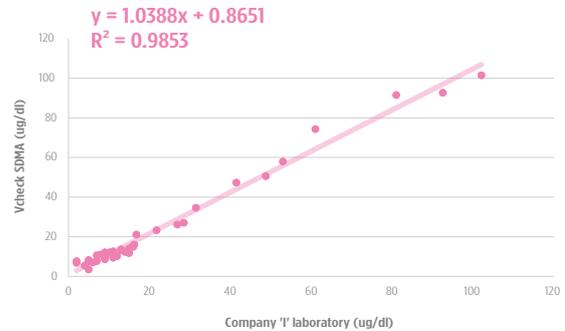
| Product No. | Product Name | Product Type | Packing Unit |
|-------------|--------------|--------------|--------------|
| VCF125DD | Vcheck SDMA | Device | 10 Tests/Kit |

Performance

Correlation with company 'I' lab. (canine, n=51)

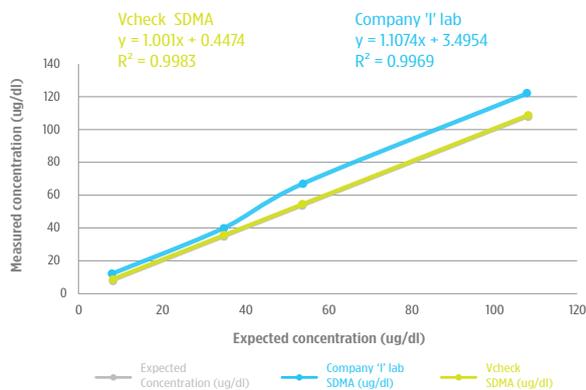


Correlation with company 'I' lab (feline, n=39)

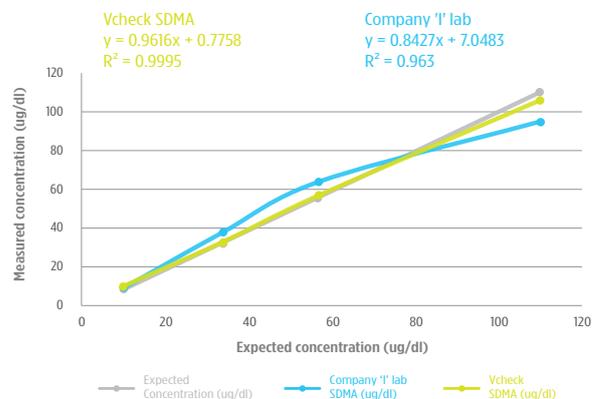


Spike-Recovery Assessment

SDMA Spike-Recovery(Canine)



SDMA Spike-Recovery(Feline)



Reproducibility and Accuracy

| Concentration Range | Precision | Accuracy |
|------------------------------|----------------|-------------------------------|
| 10.0 - 13.9 $\mu\text{g/dL}$ | $SD \leq 1.7$ | within $\pm 2 \mu\text{g/dL}$ |
| 14.0 - 19.9 $\mu\text{g/dL}$ | $SD \leq 1.7$ | within $\pm 2 \mu\text{g/dL}$ |
| 20.0 - 45.0 $\mu\text{g/dL}$ | $CV \leq 10\%$ | within $\pm 15\%$ |
| > 45.0 $\mu\text{g/dL}$ | $CV \leq 10\%$ | within $\pm 15\%$ |



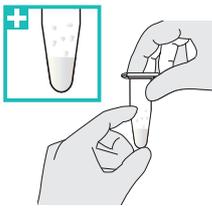
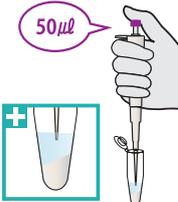
Reproducibility



Accuracy

Test Procedures

* Please place each packaged product at room temperature(18~25°C) 30 minutes before use. Warming this up by hand should be avoided, otherwise improperly elevated temperature may generate invalid results.

| Sample | Pretreatment | Mix | Centrifuge |
|--|--|---|---|
|  <p>Sample 100ul</p> |  <p>Pretreatment buffer 25ul</p> <p>*The end of pipette tip should be applied onto the inner wall of the tube to prevent the pipette tip from becoming clogged.</p> |  <p>Mix well using vortex, if not, tap with fingers 6-8 times.</p> <p>* Ensure that the sample and pretreatment buffer are well mixed to form white sediment.</p> |  <p>Within 10 seconds of mixing well, centrifuge at 6,000 x g for 5 min. (10,000 RPM for 5 min. with the centrifuge provided by BioNote)</p> |
| Collect supernatant | Assay diluent | Mix | Apply |
|  <p>Collect 50ul supernatant and transfer to a NEW 1.5ml tube.</p> <p>* Be careful not to bring the sediments at the bottom.</p> |  <p>Assay diluent 50ul</p> <p>* Be sure to mix the supernatant and diluent thoroughly.</p> |  <p>Within one minute, use a disposable tablet pipette to mix well until the white tablet dissolves in the pipette completely.</p> |  <p>Load all of the mixed sample.</p> |

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