Hyperthyroid cats: the IDEXX **SDMA**™ Test is a more reliable indicator of kidney function than creatinine

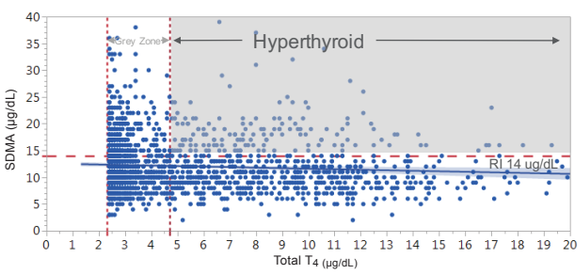
Hyperthyroidism is a disease seen primarily in older cats, in which kidney disease is also common.

The clinical challenge is that hyperthyroidism can mask the presence of kidney disease,[1] and until now, there has not been a reliable routine diagnostic test that can assess kidney function in cats affected by hyperthyroidism.[2]

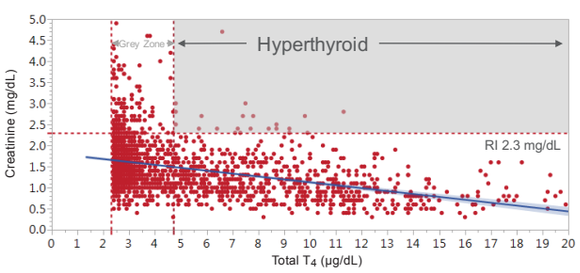
Creatinine, being a by-product of muscle, is underproduced in feline hyperthyroidism as a result of muscle loss and becomes a poor indicator of kidney function. Creatinine is also lowered by the hyperfiltration associated with the increased metabolic state.

The IDEXX SDMA™ Test is not impacted by weight loss and muscle mass and is only slightly blunted by hyperfiltration, making it a much more reliable marker of kidney function in hyperthyroid cats.[3]

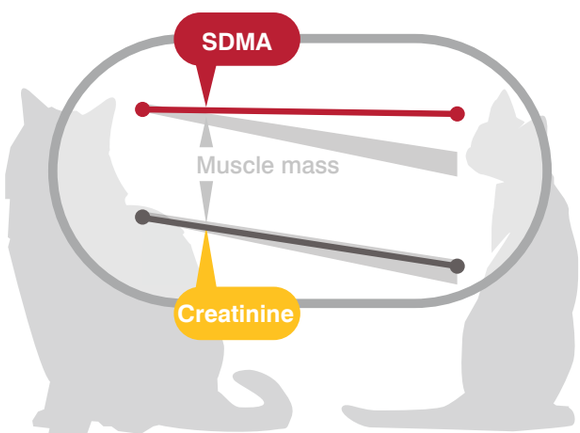
SDMA* is not impacted by loss of muscle mass in hyperthyroid cats, making it a more reliable indicator of underlying kidney disease.



Creatinine decreases with loss of muscle mass in hyperthyroid cats, making it unreliable in detecting underlying kidney disease.



SDMA is not impacted as muscle mass decreases.
Creatinine decreases as muscle mass decreases.



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Data research findings

SDMA is a more reliable indicator of kidney function in hyperthyroid cats than creatinine. To demonstrate that SDMA remains relatively stable in the face of both muscle loss and hyperfiltration, a large retrospective data analysis was performed comparing creatinine and SDMA results in cats older than 5 years of age. It also compared the number of cats with kidney disease identified by creatinine versus the number of cats identified by SDMA as having kidney disease.

The prevalence of kidney disease was evaluated in a general population of cats and compared to a hyperthyroid feline population.

In the general feline population: Creatinine was found to be increased above the reference interval in only 14% of the cats; SDMA was increased in 27% (figure 1). These results align with numerous studies that have shown that SDMA can detect kidney disease when creatinine is normal because SDMA identifies disease earlier.[4] These findings suggest that by using the IDEXX SDMA™ Test, veterinarians have the opportunity to diagnose kidney disease 2 times more in feline patients.

In the hyperthyroid feline population: Creatinine results above the reference interval decreased dramatically from 14% to 3.5% in the hyperthyroid feline population; whereas, the proportion of cats with increased SDMA above the reference interval remained similar to the general population at 20.6% (figure 2).

This robust retrospective data analysis demonstrated that there is a profound effect on creatinine results in hyperthyroid cats. The decrease in creatinine results are due to loss of muscle mass and hyperfiltration, where SDMA results were only slightly blunted as a result of hyperfiltration effects.

Conclusion

The IDEXX SDMA™ Test reliably identified 6 times more hyperthyroid cats with kidney disease than creatinine. **Creatinine missed 82%† of hyperthyroid cats that the IDEXX SDMA Test identified as having kidney disease.**

Figure 1.

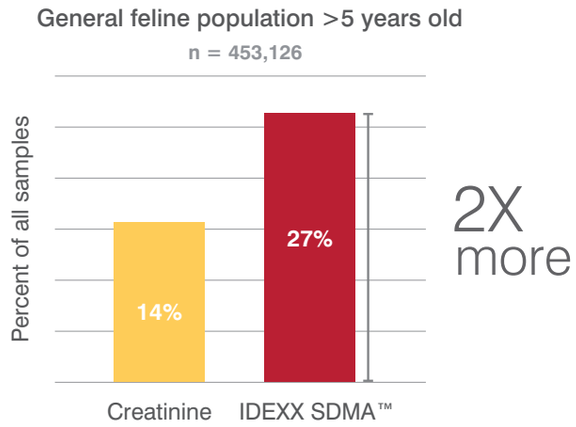
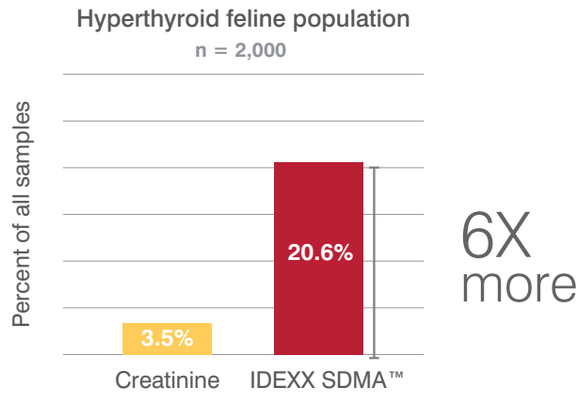
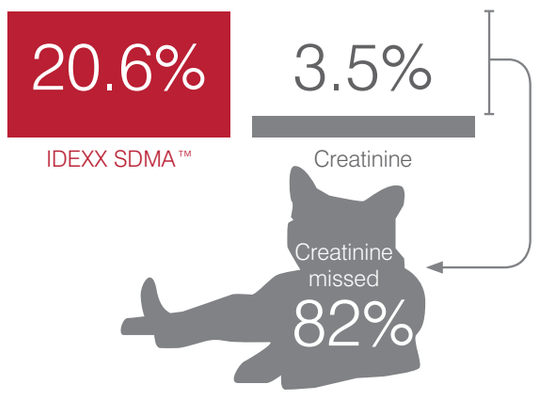


Figure 2.



The IDEXX SDMA™ Test identified more hyperthyroid cats with kidney disease than creatinine



*Symmetric dimethylarginine

†Kidney disease was identified in 72 hyperthyroid cats out of the hyperthyroid feline population (n = 2,000), or 3.5%, using creatinine alone. However, kidney disease was identified in 412 hyperthyroid cats out of the hyperthyroid feline population, or 20.6%, by adding the IDEXX SDMA Test. This means that using creatinine alone missed 340 hyperthyroid cats with kidney disease, or 82%.

References

1. Williams T. Chronic kidney disease in cats with hyperthyroidism. *Clin Brief*. Sept 2015:10–12.
2. Jepson R. Feline hyperthyroidism and chronic kidney disease. In: Proceedings from the BSAVA Congress; April 9–12, 2015; Birmingham, UK.
3. Hall JA, Yerramilli M, Obare E, Yerramilli M, Yu S, Jewell DE. Comparison of serum concentrations of symmetric dimethylarginine and creatinine as kidney function biomarkers in healthy geriatric cats fed reduced protein foods enriched with fish oil, L-carnitine, and medium-chain triglycerides. *Vet J*. 2014;202(3):588–596.
4. Data on file at IDEXX Laboratories, Inc. Westbrook, Maine USA.

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