

IDEXX Reference Laboratories Introduces New Free T4 Test with Proven Accuracy, Better Precision and Faster Results

Background

Hypothyroidism is the most common endocrinopathy in dogs¹ and hyperthyroidism is a common endocrinopathy in older cats.² Diagnosis of these conditions is based upon the presence of clinical signs of disease, compatible clinicopathologic changes on routine laboratory work and supportive thyroid function test results.

A total T4 concentration in conjunction with a CBC and a chemistry panel is a good initial screen for hypo- and hyperthyroidism. However, because of the challenging nature of diagnosing thyroid disease, additional thyroid diagnostics are often performed before a definitive diagnosis is achieved.

New Free T4 Test has improved precision and turnaround time

Free T4 is the unbound biologically active fraction of T4. The pituitary-thyroid axis functions to maintain free T4 within a certain range and it may more accurately reflect thyroid function. Different tests are available to measure the concentration of free T4 in serum.

On 1st February 2012, IDEXX Reference Laboratories will introduce a new methodology to measure free T4 that is more precise, offers faster turnaround time and is safer for the environment than the existing methodology, Free T4 by Equilibrium Dialysis [Free T4 (ED)].

Overview of features and accuracy of the new Free T4 Test compared to the Free T4 (ED) Test:

	New Free T ₄	Free T ₄ (ED)
Analyte measured	Free T ₄	Free T ₄
Test optimized for	Veterinary use: veterinary-specific assay	Human use: assay adapted for veterinary use
Type of assay	Chemiluminescent immunoassay	Radioimmunoassay
Test measures	Light emission	Radioactivity
Automated	Yes	No
Precision	Excellent reproducibility	Poor reproducibility
Incubation time	30 minutes	18 hours
Turnaround time	Usually with chemistry panel; 1 day	2–4 working days
Dogs		
Reference interval	0.6–3.0 ng/dL 7.7–38.6 pmol/L	0.7–3.7 ng/dL 9.0–47.4 pmol/L
Specificity in healthy dogs	96%	88%
Accuracy in dogs with clinical signs of hypothyroidism	89%	91%*
Cats		
Reference interval	0.7–2.6 ng/dL 9.0–33.5 pmol/L	1.2–4.3 ng/dL 15.4–55.3 pmol/L
Specificity in healthy cats	96%	100%
Accuracy in cats with clinical signs of hyperthyroidism	89%	89%

*Accuracy favorably biased because dogs with low concentrations determined by the Free T₄ (ED) Test were selected for the study.

New free T4 reference intervals and accuracy established based on results of multicenter clinical trials

Normal reference intervals for new Free T4 Test based on well-characterized euthyroid dogs and cats

- 49 clinically healthy dogs confirmed to be euthyroid based upon a thorough history, physical examination, CBC, chemistry panel, total T4, cTSH and TSH stimulation test results.
- 53 clinically healthy cats confirmed to be euthyroid based upon a thorough history, physical examination, CBC, chemistry panel and total T4. Technetium scans were also performed on 10 cats, and results were normal.

Accuracy of new Free T4 Test established in clinical studies

56 dogs with clinical signs of hypothyroidism were enrolled in the study.

Accuracy of new Free T4 Test established in clinical studies

- 56 dogs with clinical signs of hypothyroidism were enrolled in the study.
 - A complete history, physical examination, CBC, chemistry panel, total T4, cTSH, and TgAA and free T4 testing by a number of methods were performed.
 - Dogs were classified as either euthyroid (n=31) or hypothyroid (n=25) based upon results of a TSH stimulation test.
 - New Free T4 Test accurately differentiated 20 of 25 (80%) of dogs as hypothyroid and 30 of 31 (97%) of dogs as euthyroid for an accuracy of 89% in dogs with clinical signs of hypothyroidism.
- 44 cats with clinical signs of hyperthyroidism were enrolled in the study.
 - A complete history, physical examination, CBC, chemistry panel, total T4, free T4 testing by a number of methods and technetium scan were performed.
 - 23 cats had an increased total T4 and 21 cats had a total T4 in the upper end of the reference interval.
 - Cats were classified as either euthyroid (n=5) or hyperthyroid (n=39) based upon results of the technetium scans.
 - New Free T4 Test accurately identified 34 of 39 (87%) of cats as hyperthyroid and 5 of 5 (100%) of cats as euthyroid for an accuracy of 89% in cats with clinical signs of hyperthyroidism.

Ordering Information

To provide IDEXX clients with superior service, the new Free T4 Test will become the routine free T4 test available through IDEXX Reference Laboratories and will replace the Free T4 (ED) Test on all current tests and panels at no extra charge. The Free T4 (ED) Test can still be ordered at the same price using the new test codes listed below.

New Free T4 Code	Free T4(ED) Code	Test Name	Specimen Requirements
FTA	FT4E	Free T4	1 mL serum
DFT		Free T4 Add-on	1 mL serum

Contacting IDEXX

Laboratory Customer Support

If you have any questions regarding test codes, turnaround times or pricing, please contact our Laboratory Customer Support Team at 1300 44 33 99.

Expert Feedback When You Need It

Our team of internal medicine specialists is always available for complimentary consultation. Please call 1300 44 33 99, if you have questions.

References

1. Ferguson DC. Testing for hypothyroidism in dogs. *Vet Clin Small Anim.* 2007;37:647–669.
2. Feldman EC, Nelson RW. *Canine and Feline Endocrinology and Reproduction.* 3rd ed. St Louis, MO: Elsevier; 2004.

