



Feline Radioiodine Center

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FELINE THYROID TESTING

DIAGNOSING HYPERTHYROIDISM

Confirming hyperthyroidism requires lab findings that support hyperthyroidism, as well as clinical signs and exam findings consistent with the disease. Some cats, especially early cases, may only exhibit soft lab findings or no clinical signs. TT4 by itself is adequate for more advanced cases of the disease. Additional testing is available for earlier, more subtle cases. Patient care is improved when all of these factors are taken into consideration prior to methimazole or y/d trial and certainly prior to irreversible radioiodine.

THYROID TESTS

Lab values should be interpreted in light of clinical signs and exam findings.

TT4 is elevated in 90-95% of hyperthyroid cases, but only in 60-80% of mild disease. TT4 should be tested in every thyroid status assessment. fT4 and TSH are used in conjunction with TT4 on the same sample, not run alone. Results must be interpreted with an understanding of

1. “sick euthyroid” (where serious non-thyroidal illness can lower TT4)
2. daily fluctuations in TT4 value (which can lower some hyperthyroid cats into high normal range).
3. In ~ 5% of cats, thyroid status is not accurately assessed using standard TT4 methodology (automated immunoassay). RIA or Immulite are needed (“post-pill”).
4. RIA or Immulite is used for patients on levothyroxine, with peak (4-6hr post-pill) or trough (12 hrs) timing.

fT4 is elevated in 97-98% of hyperthyroid cats. This must be interpreted cautiously as it is falsely high in 10-30% of euthyroid cats with non-thyroidal illness. Intestinal disease in particular can be associated with elevated fT4. For this reason, TSH is becoming more commonly added to thyroid testing profiles.

TSH (thyrotropin) is the gold standard in evaluating hypothyroidism in human patients. It is being incorporated more into feline medicine in 3 main scenarios:

1. **MOST IMPORTANT:** Elevated TSH post-treatment is diagnostic for **iatrogenic hypothyroidism** (or in kittens with suspected congenital hypothyroidism).
2. “Gray” zone TT4 and undetectable TSH is consistent with **very mild (occult) hyperthyroidism**. Undetectable TSH can further justify a methimazole trial. Canine TSH at the reference labs has these caveats: **1.** Only ~40% of feline TSH is measured **2.** The lower limit is 0.03. There is a subset of *euthyroid* cats who will have undetectable canine TSH, and therefore are misdiagnosed as hyperthyroid. Zomedica Truforma feline TSH measures to 0.008, allowing for much better differentiation of these cases.
3. As a **radioiodine pretreatment test**, in early cases to ensure that TSH is undetectable, implying intact negative feedback loop, which should protect normal thyroid tissue from taking up radioiodine. This is why we may perform some pre-testing TSH at our clinic using Truforma if it is not available at your clinic.

