

LABORATORY MEASUREMENT

A. Total T4 and Free T4 (Canine and Feline)



↑
HYPERTHYROIDISM
INCREASED

- Thyroid cancer
- Overdose of thyroxine medication
- Presence of T4AA interfering in assays (spuriously high, except when FT4 [Free T4] is measured by ED)

● **NORMAL**

If clinical signs support
hypothyroidism, run
more thyroid tests

Normal thyroid
function

Note: T4/FT4 [Total T4/Free T4] Ratio is also important.

↓
DECREASED
HYPOTHYROIDISM

- Treat and assess clinical and lab response
- If no clinical signs, run more thyroid tests, or repeat tests in 2-4 months
- Non-thyroidal illness (NTI)

B. Total T3 and Free T3 (Canine and Feline)



↑
HYPERTHYROIDISM
INCREASED

- Thyroid cancer; hyperthyroid geriatric cat
- Overdose of thyroxine medication
- Presence of T3AA interfering in assays (spuriously high)
- Increased tissue metabolic demand (compensatory response)

● **NORMAL**

Hypothyroidism *without*
concurrent NTI

Normal thyroid
function

↓
DECREASED
NTI

- Identify concurrent illness
- Treat and retest in 2-4 months
- Presence of T3AA interfering in T3 assay only (spuriously low at MSU Lab only)

C. Thyroid Autoantibodies (Canine Only)



↑
INCREASED
AUTOIMMUNE THYROIDITIS

Rabies vaccination within
45 days

● **TGAA NORMAL**
NORMAL THYROID FUNCTION

Functional hypothyroidism

↓
DECREASED
N/A

↑
INCREASED
AUTOIMMUNE THYROIDITIS

● **T4AA and/or T3AA NORMAL**
NORMAL THYROID FUNCTION

Functional hypothyroidism

● **T4AA and/or T3AA DECREASED**
N/A

D. Thyroid Stimulating Hormone, TSH (Canine)



↑
INCREASED
PRIMARY HYPOTHYROIDISM

- Discordant result common (~ 30% of results, false + or -)

● **NORMAL**
NORMAL THYROID FUNCTION

- Discordant result common (~ 30% of results, false + or -)

↓
DECREASED
SECONDARY OR TERTIARY HYPOTHYROIDISM (RARE)

- Secondary to Thyroid Tumor
- Discordant result common (~ 30% of results, false + or -)
- Dog on thyroxine therapy

E. Thyroid Stimulating Hormone, TSH (Feline)



↑
INCREASED
SECONDARY HYPOTHYROIDISM

- After surgery or I-131 for thyroid tumor

● **NORMAL**
NORMAL THYROID FUNCTION

↓
DECREASED
FELINE HYPERTHYROIDISM

- Geriatric cats