

Hypothyroidism in Dogs

The major hormone produced by the thyroid gland is T4 (thyroxine). Thyroid gland function is controlled by the pituitary gland, through a hormone called TSH (thyroid stimulating hormone). Hypothyroidism is the most common dysfunction of the thyroid gland in dogs and is associated with decreased production of T4 and T3 (triiodothyronine). Low T4 is often associated with increased concentrations of TSH (thyroid stimulating hormone). Measuring both total T4 and TSH can provide definitive diagnosis of canine hypothyroidism.

Low T4 and High TSH. The Thyroid Feedback Loop.

When the thyroid gland does not produce enough T4, a signal is sent from the pituitary gland in the form of increased TSH (thyroid stimulating hormone). TSH signals the thyroid gland to produce more T4. If the thyroid gland is damaged and unable to respond by producing adequate levels of T4 as instructed by higher concentrations of TSH, hypothyroidism is firmly suspected: Low T4 and High TSH.

Low T4 alone is not sufficient to diagnose hypothyroidism
Normal T4 and Normal TSH largely rules out hypothyroidism
Low T4 and High TSH largely confirms hypothyroidism

Common Tests and Associated Laboratory Abnormalities*

Complete Blood Count

- Non-regenerative Anemia (+/- leptocytes)

Chemistry Analysis

- Hypercholesterolemia
- Hypertriglyceridemia

Immunodiagnostic Hormone Analysis: total T4 + TSH +/- free T4

- Low total T4 points to the possibility of hypothyroidism.
- High TSH indicates hypothyroidism when total T4 and free T4 are low.

*Abnormalities listed may not be seen in all cases, but can be supportive of hypothyroid diagnoses.



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