

TOTAL T4 (Canine)

SAMPLE REQUIRED:

Serum (0.5 mL) or clotted blood (1.5 mL)

BLOOD TUBE REQUIRED:

Gel (gold top) or plain (red top) tubes.

Indications

Diagnosis of hypothyroidism.
Monitoring thyroid replacement therapy.

Collection Protocol

General

- Ideally fast the animal for 12 h.
- Collect blood sample.
- Store the sample at 4°C. If transport to the laboratory will be delayed (> 12 hours), the sample should be centrifuged and the serum separated.

Monitoring therapy

- This is usually done 4-8 weeks after initiating thyroxine therapy, or 2-4 weeks after a change in dose rate.
- Collect a sample 4-6 hours after administration of thyroxine.

Review of thyroid status in a dog currently receiving thyroid hormone supplementation

Exogenous thyroid hormone can suppress TSH secretion resulting in thyroid gland atrophy, and thus a low serum total T4 could suggest hypothyroidism (even in a previously euthyroid dog). To obtain a valid baseline total T4 result, thyroid hormone supplementation must be discontinued for a period of time to allow the pituitary-thyroid axis sufficient time to regain normal function. That time interval depends on the duration of treatment, the dosage and frequency of administration thyroxine and individual animal variation. As a guide, thyroid hormone supplementation should be discontinued for a minimum of 4 weeks, and preferably 6-8 weeks before re-evaluation of thyroid gland function.

Notes

- Total T4 provides an appropriate initial assessment of thyroid function in dogs.
- Free T4 (by equilibrium dialysis) is a more reliable test for evaluation of thyroid function in dogs with concurrent medical problems, as it is less likely to be suppressed by non-thyroidal illness or drug therapy.
- Drugs that may lower total T4 concentration include glucocorticoids, sulphonamides, phenobarbital, carprofen, and clomipramine.
- To support a presumptive diagnosis of hypothyroidism based on total T4, further diagnostic options include endogenous TSH and free T4 (by equilibrium dialysis).