Cornell University
Animal Health Diagnostic Center

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Canine Thyroid Testing

Diagnosis and management of thyroid disease in dogs requires valid testing in order to be accurate. The AHDC Endocrinology Lab offers the following thyroid tests along with consultations of test results by our knowledgeable staff for your support. The full Canine Thyroid Panel is the most comprehensive test offered and includes measurement of all five items below. For your convenience the laboratory offers the tests below alone and in different combinations. The Endocrinology Lab is also authorized to test samples submitted for certification into the OFA Thyroid Registry. OFA testing includes free T_4, Canine Thyroglobulin Autoantibody detection and TSH.

T_4 and T_3

Total T_4 (or Thyroxine) measurement is a useful screening test for diagnosing hypothyroidism in dogs. It is also an economical way of following post pill treatment. Total T_3 testing (or Triiodothyronine) is less helpful, but can indicate hypothyroidism. Unexpected extremely high levels of either hormone may be indicative of autoantibodies. T_3 and T_4 concentrations can also be affected by other factors such as medications, disease states and nutrition.

Free T_4 by Immulite or by Equilibrium Dialysis

Measurement of free T_4 (FT_4) with a valid assay can be useful for diagnosis of true hypothyroidism and differentiating it from the euthyroid sick condition. Euthyroid sick dogs may have low T_3 and /or T_4 levels due to other non-thyroid factors (e.g. medications, non-thyroid disease, nutrition, etc.). Free T_4 (FT_4) is the non-protein bound thyroxine and it is present in lower concentrations in the blood than total T_4. For accurate FT_4 testing the procedure should have a method for separating the protein bound hormone from the free (unbound) hormone. The Equilibrium Dialysis (ED) method (historically considered the gold standard test for dogs) uses an overnight incubation in buffer and dialysis cells to separate the bound T_4 from the free. The Immulite method uses a very specific antibody. The Immulite method is faster and less expensive than the ED method and for dogs it produces results that are comparable to the dialysis method. The Immulite method will be used for all canine FT_4 testing in this lab, unless ED is specifically requested. FT_4 should be used to monitor thyroid supplementation in any dog known or suspected to have thyroid autoantibodies (T_4, T_3, or Thyroglobulin autoantibodies), as these tests remove the autoantibody effects.

Thyroglobulin Autoantibody (TgAA) Test

The TgAA test is offered as a canine-specific test. Dogs with autoimmune thyroiditis develop autoantibodies against thyroglobulin, a protein that is involved in the synthesis of T_4 and T_3. The TgAA test is recommended for detecting this condition. It is recommended that this test be used in conjunction with the other thyroid tests for more accurate diagnosis.

TSH measurement

The measurement of endogenous thyroid stimulating hormone (TSH) is available for dogs. High TSH results are suggestive of hypothyroidism, but normal or low TSH results do not necessarily rule it out. It is recommended that this test be used in conjunction with the other thyroid tests for diagnosis.

Guidelines for Sample Collection and Processing:

1. Collect blood into a plain red-top collection tube and refrigerate the specimen.
2. Allow blood adequate time to clot prior to centrifugation to ensure sufficient yield and avoid fibrin formation.
3. After centrifugation, transfer the serum into a vial suitable for shipping or frozen storage. Frozen sample storage is recommended unless samples are being shipped on the day taken.
4. Ship samples with cold packs. A frozen specimen is not necessary, but the sample should arrive chilled.

Note: *Free T_4 can be falsely elevated if the sample is warmed, as heat causes dissociation of T_4 from the carrier proteins increasing free T_4 concentrations. Special care should be taken when shipping samples in the summer.*