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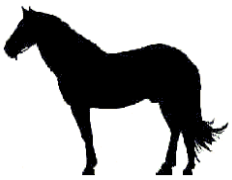
Equine Thyroid Testing

Thyroid Testing: T_4, T_3 & Free T_4 by Equilibrium Dialysis Baselines



The T_4 baseline (also called Total T_4 or Thyroxine) is routinely used for assessment of overall health and for the initial evaluation of thyroid function in the horse. It is also recommended for monitoring horses on thyroid supplementation, ideally taken 2-8 hours post-medication. The T_3 baseline (also called Total T3 or Triiodothyronine) is the active form and is more variable than either T4 or Free T4 by equilibrium dialysis (FT4D). The FT4D test can be useful in differentiating hypo- or hyper-thyroidism from low or high T_4 and T_3 concentrations caused by non-pathologic factors (i.e., certain medications, supplements, and nutrition). Free T_4 should **not** be used for monitoring supplementation, as Free T_4 levels are usually unaffected.

- *We now prefer serum samples for T4 testing. T4 is falsely elevated in plasma samples in our present assay.*
- *Free T_4 may be falsely elevated in heated samples due to dissociation of T_4 from its carrier proteins. Special care should be taken when shipping samples in the summer.*

TRH-Response Test: T_4 testing or T_4 and T_3 testing

The TRH- (thyrotropin-releasing hormone) response test can be used for diagnosing hypothyroidism in horses. TRH is presently available as a compounded product through Wedgewood Pharmacy. The Wedgewood Pharmacy product is called *"Protirelin"*.

1. Draw a baseline (pre) blood sample in a plain red-top tube following "Sample Collection and Processing Guidelines" for serum below.
2. Inject 1 mg of TRH intravenously.
3. *Optional Step:* Collect a blood sample 2 hours after injection.
4. Collect a blood sample 4 hours after injection.
5. Submit the paired samples together and request either T_4 testing or both T_4 and T_3 on each.

Sample Collection and Processing Guidelines for Thyroid Testing

1. Collect blood into a plain* red-top collection tube for serum.
2. For serum, allow the red-top blood specimen adequate time to clot prior to centrifugation to avoid fibrin formation and ensure sufficient serum yield. This can be at room temperature or refrigerate if longer than one hour will be needed before centrifugation.
3. After centrifugation, transfer serum into a vial suitable for shipping and frozen storage.
4. Frozen storage is recommended unless samples are being shipped the day taken. A frozen sample is not necessary but the samples should arrive chilled. Ship samples with a cold pack.

**Avoid use of serum collection tubes with additives (i.e. separator gels, clot activators, inhibitors, etc.) due to potential assay interference.*