



Thyroxine Advisory

August 18, 2020

The practice of prescribing levothyroxine to large numbers of racehorses has drawn scrutiny and raised questions about the legitimacy of its use in horses engaged in training and racing. There are multiple instances where records indicate levothyroxine was prescribed for every horse in a trainer's care.

- Thyroxine (levothyroxine sodium) is a prescription medication used to treat hypothyroidism. It has also use in the treatment of obesity and insulin resistance in horses. Levothyroxine sodium is commercially available for equine use in powdered formulations such as Thyro-L and Thyrozine.
- Diagnosing hypothyroidism is most reliably achieved by TRH or TSH challenge. (<https://www.vet.cornell.edu/animal-health-diagnostic-center/testing/protocols/equine-thyroid>). NOTE: In the testing link to Cornell's website, "equine" is incorrectly spelled. This is, however, the link, and if 'equine' is corrected to 'equine' the link does not work.
- Measurement of serum T3 and T4 concentration is an unreliable indicator of Thy thyroid function. Horses with normally functioning thyroid glands (euthyroid) experience decreased concentrations of circulating T3 and T4 concentrations as a result of medication use (e.g. phenylbutazone, corticosteroids); high protein diets or high carbohydrate: roughage diets; exercise; and non-thyroid, systemic illness (euthyroid sick).
- A positive clinical response in a thyroxine treated horse is not evidence of hypothyroidism.
- Absent the results of a TRH/TSH stimulation test there is no scientific evidence that a lowered T3 or T4 value warrants administration of thyroxine.
- It is the position of the AAEP and the RMTC that the prescribing and dispensing of levothyroxine on a herd health basis to horses with normal thyroid function is not medically justifiable.

Frank et al in Vet Clin Equine 18 (2002) 305–319:

Many horses receive thyroid hormone supplementation once low TH levels are detected in serum without regard for the type of hypothyroidism present and despite what appears to be an extremely low incidence of primary hypothyroidism in horses. The effects of thyroid hormone supplementation in euthyroid horses or in horses with secondary hypothyroidism has yet to be determined and should therefore be used with

caution. Such supplementation may actually further suppress pituitary function in horses with low thyroid hormone levels due to secondary hypothyroidism.

When used alone, the low specificity of serum TH measurements results in the frequent misdiagnosis of hypothyroidism in horses. A positive response to TH replacement therapy is also often presented as evidence of hypothyroidism. It must, however, be noted that exogenous TH stimulates overall body metabolism, and may therefore also benefit horses suffering from a wide variety of nonthyroidal conditions.