Serum thyroxine concentrations in post-racing blood samples from Standardbred horses racing at an Indiana pari-mutual racetrack

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Some of the racehorses that present to referral facilities for treatment of atrial fibrillation have extremely elevated blood thyroxine (T4) concentrations, suggesting the possibility that T4 in supraphysiologic amounts is being given to race horses, perhaps in the belief that it enhances performance. To gain a better appreciation as to whether excessive T4 supplementation is a concern in Indiana racehorses, a random, anonymous group of 50 post-race blood samples was submitted for T4 determination.

During a Standardbred racing meet in the summer of 2010, blood was collected from 1 or more horses per race within 3 hours of finishing. It was collecting into separator tubes, spun and frozen within 12 hours of collection. Serum remained frozen until analysis. Serum thyroxine concentrations were determined by the Cornell AHDC Endocrinology laboratory.

The results revealed that the average T4 value was 2.22 µg/dL. Three of the 50 samples had T4 concentrations higher than the laboratory’s normal reference range (1.5 - 4.5 µg/dL) at 4.89, 5.38, and 5.34 µg/dL. Because horses in race training tend to have lower T4 concentrations when compared to sedentary horses, these high values strongly suggest that the horses are receiving excessive exogenous T4 supplementation. Finding 3 such samples from a set of 50 raises the concern that thyroid hormone over supplementation is a pervasive practice in race horses.