

HYPOTHYROIDISM IN GREYHOUNDS



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Greyhound in a Parkland Landscape

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The paired thyroid glands are located in the upper part of the neck beside the trachea (windpipe). When stimulated by the hormone TSH (thyroid stimulating hormone) produced by the brain's pituitary gland, the thyroid glands produce and release thyroid hormones (T3 & T4) into the bloodstream. Thyroid hormones are important in many areas of body metabolism. Thyroid deficiency (hypothyroidism) most commonly results in dermatologic disorders, reproductive abnormalities, lethargy and mental dullness, obesity, slow heart rate (normal in our greyhound athletes), and less commonly, muscle and nerve dysfunction.

Hypothyroidism is one of the most over-diagnosed conditions in veterinary medicine and is a scapegoat for conditions as diverse as lethargy and hyperactivity, shyness and aggression. While any of these manifestations is possible, hypothyroidism is far from the answer to everything. Every owner of every fat dog wants to "fix it" with thyroid pills. Similarly, veterinarians pray for a hypothyroid diagnosis to explain every non-responsive skin case.

The difficulty in diagnosing hypothyroidism in greyhounds is twofold:

- 1) There are inherent imperfections in measuring T4 levels.
- 2) Normal greyhound T4s are lower than those in the general canine population.

The diagnosis of hypothyroidism should be based on the correlation of abnormally low thyroid function tests combined with a clinical history compatible with hypothyroidism. "Low" T4s in the absence of clinical signs are useless and many a greyhound winds up on unnecessary lifelong Soloxine.

A study by Bloomberg at the University of Florida measured T4s in 221 greyhounds who had been prescreened for other endocrinopathies. They ranged in age from 11 months to 10 years. The T4 range was .5 - 3.6, with a mean of 1.47. Of 221 greyhounds, 48 had T4s below 1.0. Keep in mind that most commercial diagnostic labs consider these normal greyhound means, borderline to low.

The breakdown was: **Mean T4**

97 in training or racers	1.53
99 brood bitches	1.56
25 stud dogs	.94
221 total	1.47

It was theorized that the lower T4s among studs might be because T4 concentrations tend to decrease with older age in canines.

These findings correlate well with an article in the February, 2000 issue of "Veterinary Medicine", (Common Skin Diseases in Greyhounds), which gives a greyhound normal T4 range of .7 - 3.6.

Little emphasis is placed on T3 as a diagnostic tool for canine hypothyroidism, but both these sources show higher T3s for greyhounds vs. other dogs.

While T4 is the standard hypothyroid screening test, Many extraneous factors can suppress T4 including anorexia, sickness, and a variety of drugs, most importantly steroids, sulfas and seizure medications. "Sick euthyroid" refers to the common condition where the dog has normal thyroid function but illness lowers the T4. These dogs do not require Soloxine. It is unknown if the extreme stresses of racing, travel, and dense kennel populations may also play a role in thyroid gland function.

If there is concurrent illness, the T4 will be low and it doesn't mean a thing (sick euthyroid). Therefore, the ideal situation with new adoptees is resolving health problems first, then testing once the greyhound is healthy and has been off the track six months or more. Though six months isn't written in stone, it is ample time for poor haircoats/bald thighs to re-grow and for "spooks" to show their true colors.

if after a reasonable time period and return to health, there are still clinical signs and a low T4, a free: T4 (fT4) by equilibrium dialysis and TSH are recommended. ff4 by equilibrium dialysis (be sure this is the method used) is essentially a T4 reading that's less influenced by extraneous factors. TSH is a compromise to actual TSH stimulation, which is considered the "gold standard" in thyroid testing, but is not widely available. With all of these, it is imperative not to heparinize the red top tube the sample is collected in.

This may seem like a lot of testing and a waste of money to some, but it's very simple (a blood draw) and beats keeping a greyhound unnecessarily on Soloxine forever on the basis of one "low" T4.

A simplistic explanation of TSH is that if your greyhound is truly low on T4, the pituitary responds by cranking out TSH by the boatload -- essentially screaming "Make, more T4!" While TSH isn't a perfect test either, the combination of T4, ff4, and TSH gives you a much better assessment than just a T4. If T4 is borderline and TSH is on the low side, the dog is unlikely to be hypothyroid. But, if T4 is borderline and TSH is high or at least towards the high end of normal, it's cause to try Soloxine.

The chart below compares panels run on three different dogs with the T4, fT4 and TSH using All-breed "normal" standards set by IDEXX Lab.

IDEXX ALL-BREED NORMALS		
T4	Low:	<1.0
	Gray Zone:	1.0 – 1.7
	Normal	1.8 – 3.6
ft4		.7 – 2.5
TSH		.05 – .42

PANEL RESULTS			
	T4	ft4	TSH
Dog #1:	1.4	.5	.45
Dog #2:	1.1	.6	.33
Dog #3:	1.5	2.1	.07

Conclusions:

Dog #1 - hypothyroid

Dog #2 - Suspicious, try Soloxine.

Dog #3 - Sorry, not hypothyroid, just fat!

Finally, if you just cannot tell from blood tests, often the best test is a 6-week trial on Soloxine. If signs resolve, there's your answer. If his thighs stay bald, please don't leave him on Soloxine forever. Bald thigh syndrome in greyhounds is as yet of uncertain etiology, some respond to Soloxine, some don't. If you're just not sure it helped, stop the Soloxine in 6 weeks and see if things get worse again once he's off it.

The last mud to tread through with regard to hypothyroidism is dosing. Just about all veterinarians agree that brand name Soloxine is superior -- accept no substitutes. Dr. Jim Gannon, author of Care of the Racing Greyhound and probably the most knowledgeable greyhound vet on the planet recommends .1 to .2 mg per greyhound twice daily. The standard dog dose is .1 mg/10# twice daily. The above-mentioned Veterinary Medicine article goes with this dose. The new 2000 Ettinger's Textbook of Veterinary Internal Medicine ("the bible") says that once clinical signs resolve, you can often drop to once daily. I split the difference and give greyhounds half the standard dog dose (.1 mg/20#) twice daily. What can't be a good idea is pushing huge Soloxine doses in an effort to push these greyhound T4s up into the 3.0s and 4.0s. Greyhound T4s aren't normally that high, and I worry about the unhealthy effects of hyperthyroidism (heart, kidney, GI Tract) when this is done.