Healthy Whippet Thyroid Study

Sponsored by the **Whippet Health Foundation, Inc.**[1]

Conducted at the Endocrine Section, **Diagnostic center for Population and Animal Health**, College of Veterinary Medicine, Michigan State University[2]

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Background: Hypothyroidism is the most common endocrine disease of dogs and is often the result of autoimmune thyroiditis. In this inherited form, the dog makes antibodies against thyroglobulin (sTgAA) and the thyroid gland eventually atrophies. It is only when the dog's thyroid gland is no longer capable of producing enough hormones to sustain clinical health that signs appear. The heritable nature of this disorder poses significant genetic implication for breeding stock. It has been documented that euthyroid Greyhounds and Salukis can have thyroid hormone concentrations lower than established laboratory reference ranges derived from a variety of dog breeds.

Objectives: 1 - To see if normal, healthy Whippets have thyroid hormone values below reference ranges generated from a variety of dog breeds. 2 - To see if a breed specific reference range generated for Whippets could affect Orthopedic Foundation for Animals Thyroid classifications.

Materials and methods: Blood samples from healthy Whippets were drawn at the Whippet National Show held April 4 – 9, 2011. The serum was separated, frozen and transported to DCPAH for analysis. A full panel of thyroid values (TT4, TT3, fT4, fT4d, fT4, fT3, T4AA, T3AA, TSH, sTgAA) was measured at the endocrine section. A total of 259 (126M, 2MC, 122F, 9FS) samples from dogs ranging in age from 6 to 201 months were analyzed.

Results**: WHIPPET SUMMARY STATISTICS**

	Total T4 nmol/L	Free T4 pmol/L	Free T4 Dialysis pmol/L	Total T3 nmol/L	Free T3 pmol/L	TSH ng/mL
Overall Range	4 - 55	2 - 23	2 - 50	0.5 - 3.4	1.8 - 7.9	6 - 45
Mean ± SD	21 ± 11	11 ± 4	19 ± 9	1.6 ± 0.4	4 ± 1	14 ± 6
95% Con Interval	6 - 46	3 - 18	4 - 35	0.9 - 2.4	2.6 - 6.2	8 - 28

DCPAH THYROID REFERENCE RANGES FROM A VARIETY OF DOG BREEDS

	Total T4	Free T4	Free T4D	Total T3	Free T3	TSH
New	11 - 60	6 - 23	6 - 42	0.8 - 2.1	1.2- 2.8	0 - 30
Prior to 8/2011	15 - 67	8 - 26	6 - 42	1.0 - 2.5	4.5 - 12	0 - 37

72 Whippets had T4 values <15 (old range) and 34 <11 (new range) and could be diagnosed as hypothyroid if only a T4 and not a full thyroid panel was assayed.

OFA CLASSIFICATION OF THE WHIPPET THYROID PROFILES:
200 - NORMAL (normal FT4, normal TSH, negative sTgAA
0 - POSITIVE AUTOIMMUNE THYROIDITIS -Hypothyroid (dec Ft4, inc TSH, pos sTgAA)
3 - POSITIVE COMPENSATED AUTOIMMUNE THYROIDITIS (normal FT4, normal or inc TSH, pos sTgAA)
0 - IDIOPATHICALLY REDUCED THYROID FUNCTION –Hypothyroid (dec Ft4, inc TSH, neg sTgAA)
2 - EQUIVOCAL (any abnormal results) due slightly elevated TSH
54 - EQUIVOCAL had FT4 <8 (old) or 24 had FT4 <6 (new range)

Conclusion:

- Whippets are similar to other sight hound breeds in that healthy dogs can have low thyroid hormone (especially T4 and FT4) concentrations.
- Having a full profile run, rather than using on a T4 value, can decrease the inappropriate diagnosis of hypothyroidism in Whippets.
- Establishing and using breed specific reference ranges could decrease EQUIVOCAL OFA classification, especially in sight hound breeds.
- Using the new reference range for FT4 reduced the EQUIVOCAL classification from 54 to 24 Whippets.