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## DEVELOPMENT OF A RELIABLE DIAGNOSTIC TEST FOR CANINE HYPOTHYROIDISM

**Introduction:** A combination of a low plasma total thyroxine (TT4) concentration and an elevated plasma thyroid stimulating hormone (TSH) concentration is diagnostic for hypothyroidism. However, 30% of dogs with hypothyroidism have a normal TSH concentration and cannot be distinguished from dogs with a low TT4 due to non-thyroidal illness (NTI)(1). Other methods previously investigated to differentiate between hypothyroid dogs and dogs with NTI are lacking sufficient specificity, are expensive, not widely available or too invasive(2-5).

**Aim:** To evaluate whether plasma concentrations of growth hormone (GH) and TSH following a thyrotropin releasing hormone (TRH) stimulation test can differentiate between dogs with NTI and dogs with hypothyroidism

**Methods:** Dogs with clinical signs of hypothyroidism, a low TT4 concentration and a normal TSH concentration were eligible to participate in the study. Thyroid scintigraphy was performed to classify dogs as having hypothyroidism or NTI. All dogs underwent a TRH stimulation test. Plasma TSH and GH concentrations were measured before and after administration of TRH.

**Results:** The plasma TSH concentration did not change in the hypothyroid dogs (n=11) after administration of TRH (p=0.68), whereas it significantly increased (p<0.001) in the NTI dogs (n=10). In contrast, the plasma GH concentration increased significantly in the hypothyroid dogs (p=0.006), but did not change in the NTI dogs (p=0.13). Interestingly, there was no overlap between hypothyroid dogs and NTI dogs for several outcomes after TRH stimulation (such as the percentage increase of TSH and the absolute plasma concentration GH), resulting in a 100% sensitivity and 100% specificity to identify dogs with hypothyroidism.

**Conclusion:** A TRH stimulation test with measurement of plasma concentrations of TSH and GH can differentiate between hypothyroid dogs and NTI dogs. This is a promising test which might be used in primary veterinary practice as it is a relatively non-invasive, inexpensive and widely available test.

### References

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