In healthy canine patients, low thyroid hormone in the blood stimulates the cells bodies in the hypothalamus to secrete Thyroid Releasing Hormone (TRH). TRH then signals the Thyrotropin cells in the Anterior Pituitary Gland to release Thyroid Stimulating Hormone (TSH). This hormone signals the thyroid to increase thyroid hormone production.

Primary Hypothyroidism can alter the hypothalamus’s relationship with the pituitary gland. In canine and human patients with primary hypothyroidism, TRH stimulates the release of Growth Hormone (GH) from the anterior pituitary gland and does not significantly affect TSH concentration. Increase of GH is not seen in healthy patients or patients with Non-thyroidal Illness.

The release of GH causes many of the characteristic acromegalic effects of primary hypothyroidism, including weight gain. One of GH’s targets is the liver, where it signals the release of Insulin-like Growth Factor-1 (IGF-1). GH is released at a pulsating rate from the pituitary gland and can be hard to measure because if this. IGF-1 has a more consistent concentration in the blood.

Primary hypothyroidism can be difficult to distinguish from non-thyroidal illness. Using IGF-1 as a potential biomarker to distinguish the two could help in decreasing the amount of misdiagnosed canine patients. This study was done by comparing serum IGF-1 concentrations in patients with primary hypothyroidism, non-thyroidal illness, and healthy patients. Weight and gender were also evaluated as confounding variables that could later the concentration of IGF-1.