

TEST: THYROID STIMULATING HORMONE (TSH)

PRINCIPLE:

TSH secretion by the anterior pituitary is controlled by thyrotropin releasing hormone, a tripeptide produced by the hypothalamus. TSH stimulates the production of thyroxine (T4) and triiodothyronine (T3) by the thyroid gland. The circulating free fractions of T4 and T3 in turn regulate the secretion of TSH by a negative feedback mechanism at the pituitary and possibly the hypothalamus. The diagnosis of overt hypothyroidism by the finding of a low total T4 or free T4 concentration is readily confirmed by a raised TSH concentration. Measurement of low or undetectable TSH concentrations may assist the diagnosis of hyperthyroidism, where concentrations of T4 and T3 are elevated and TSH secretion is suppressed. TSH assays with high levels of precision and functional sensitivity claims of 0.01– 0.02 mIU/L have been termed “third generation” assays. These have the advantage of discriminating between the concentrations of TSH observed in thyrotoxicosis, compared with the low, but detectable, concentrations that occur in subclinical hyperthyroidism.

SPECIMEN REQUIREMENTS:

2ml serum collected in a red top tube with no additive or in a serum separator tube (gel barrier). Store in the refrigerator at 2°-8° for up to 7 days. For long term storage, freeze at -20° C or below. Avoid thaw freeze cycles.

METHOD: Enhanced Chemiluminescence

REFERENCES:

1. Evered DC. Diseases of the Thyroid Gland. *Clinics in Endocrinology and Metabolism*. 3:425–450; 1974.
2. Evered DC et al. Grades of Hypothyroidism. *Br Med J*. 1:657-662; 1973
3. Caldwell G et al. A New Strategy for Thyroid Function Testing. *Lancet*. 1:1117-1119; 1985.
4. Spencer CA. Thyroid Profiling for the 1990s: Free T4 Estimate or Sensitive TSH Measurement. *J Clin Immunol*. 12:82-89; 1989.

Normal Range: 0.465-4.68 μ IU/ml

Turnaround Time: 1 day