



TEST: Testosterone, Total

PRINCIPLE:

Testosterone in males is secreted by adult Leydig cells and is controlled principally by lutenizing hormone (LH). The majority of serum testosterone is bound to sex hormone binding globulin (SHBG), but it also exists loosely bound to albumin and in the free state. An abnormally low total testosterone level in males can be indicative of hypogonadism, hypopituitarism, hyperprolactinemia, renal failure, hepatic cirrhosis, or Klinefelter's syndrome. High total testosterone values in males can be caused by adrenal and testicular tumors, congenital adrenal hyperplasia or abnormalities of the hypothalamic-pituitary-testicular axis.

In females, testosterone is produced in the ovaries, adrenal glands, and peripheral fatty tissues and has a serum concentration that is approximately 10-fold less than in males. As with males, the majority of serum testosterone in females is bound to SHBG and albumin with a small amount in the free state. Increased female total testosterone levels may indicate polycystic ovary syndrome (PCOS), stromal hyperthecosis, ovarian and adrenal tumors, congenital adrenal hyperplasia and other disorders of the hypothalamic-pituitary-ovarian axis. Other clinical symptoms of testosterone excess in females include infertility, amenorrhea, obesity and hirsutism.

SPECIMEN REQUIREMENTS:

2 ml serum from blood collected in red top tube without additive or in a serum separator tube with gel barrier. Separate the serum from the clot to avoid hemolysis: red top tube – transfer serum into plastic transport vial, gel tube – spin. Transport to the lab at room temperature. Store at room temperature for up to 8h, refrigerate for up to 48h. Store frozen at -20°C or below for up to 30 days. Avoid repeated freeze-thaw cycles.

METHOD: Enhanced Chemiluminescence

REFERENCES:

1. Wilson, JD, Foster, DW (Eds) Williams Textbook of Endocrinology, 8th Edition, W.B. Saunders, Philadelphia, Pennsylvania 19106, 1992, page 822-832.
2. Brutis, CA, Ashwood, ER (Eds) Tietz Fundamentals of Clinical Chemistry, 4th Edition W.B. Saunders, Philadelphia, Pennsylvania 19106, 1996, page 671 - 672.
3. Cowan BD, and Seifer, DB (Eds) Clinical Reproductive Medicine, Lippincott-Raven, Philadelphia, Pennsylvania 19106, page 98-100.

Normal Range:

Normal Males (age 18 - 66): 1.75 - 7.81 ng/mL

Normal Females (age 21-73): <0.1 - 0.75 ng/mL

These reference intervals are the central 95% of results of a study of 240 subjects.

Turnaround Time: 3 days