

LH (Luteinizing Hormone)

Analyte: Luteinizing Hormone

Specimen Type: Serum

Optimum Volume: 0.5 mL

Stability:

2-8 Degrees C	-20 Degrees C	-70 Degrees C
2 weeks	2 months	1 year

Reporting Units: mIU/mL

Method: Chemiluminescence

Biological or Clinical Significance:

Luteinizing hormone (lutropin, LH), a glycoprotein of 28,000 daltons, is secreted by the b-cells of the anterior pituitary under the control of the hypothalamic gonadotropin releasing hormone (GnRH). LH consists of two polypeptide chains, alpha and beta. The alpha chains of LH, TSH, and HCG are biochemically identical, whereas the beta chains are biochemically unique, conferring bioactivity and biological and immunological specificity. In females, LH causes ovulation and steroid (estrogen and progesterone) production by the corpus luteum. Small quantities of LH are also necessary to promote estrogen production by the maturing follicle. In males, it stimulates interstitial (Leydig) cells to produce androgens and estrogens. Circulating levels of LH are controlled by a negative feedback effect on the hypothalamus by the steroid hormones. LH secretion, different for the two sexes and required for normal sexual function, occurs in pulses with rapid fluctuations over the entire reference range. Values for samples obtained in a single day from the same patient may therefore vary widely.

LH measurements are used to define the hypothalamic-pituitary-gonadal axis. Serum gonadotropin determinations permit distinguishing between primary gonadal failure and deficient gonadal stimulation. If LH and LH levels are elevated, primary gonadal failure is present, whereas if gonadotropin levels are low, deficient gonadal stimulation has resulted in the hypogonadal state. LH measurement is also clinically important because LH and growth hormone are frequently the first hormones to be affected by pituitary disease.

Serum LH determinations have been very useful in the diagnosis and treatment of infertility in women. A midcycle rise is a good indication that ovulation will occur approximately 24 hours later. Subfertile couples, and women being treated with gonadotropins for infertility, can be informed that ovulation is imminent.

Principle of Test Method:

The LH assay is an automated chemiluminescent enzyme-labeled immunometric assay

References:

1. Brindle E, Miller RC, Shofer JB, Klein NA, Soules MR, O'Connor KA. Urinary beta-luteinizing hormone and beta-follicle stimulating hormone immunoenzymometric assays for population research. Clin Biochem. 2006; 39:1071-1079.