

Division of Laboratory Medicine

Biochemistry

Luteinising Hormone (LH)

Assessment of the hypothalamic-pituitary-gonadal axis.

Pseudonyms: none

General information

Collection container:

Lithium heparin plasma (Sarstedt orange top, 4.9 mL adults / 1.2 mL paediatrics)

Serum (Sarstedt brown top 4.9 mL adults / white top 1.2 mL paediatrics).

Type and volume of sample:

1.0 mL whole blood is required, as a minimum volume, for the analysis of LH and FSH.

Specimen transport/special precautions:

The tube should be thoroughly mixed before transport to the lab.

Laboratory information

Method principle:

The assay is a two-site chemiluminescence immunoassay.

Biological reference ranges:

0-2 years		<3.5 IU/L
2-10 years		<0.3 IU/L
Post pubertal male		1.7-8.6 IU/L
Post pubertal female	Follicular	2.4-12.6 IU/L
	Mid-cycle	14-95.6 IU/L
	Luteal	1.0-11.4 IU

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Concentration of serum LH and FSH (AutoDELFIAs assays), expressed as mean and 5th and 95th percentiles, in normal subjects at different pubertal stages (n=316 for basal levels, n=106 for GnRH stimulated levels)

Pubertal Stage	Males				Females			
	Basal		GnRH-stimulated peak		Basal		GnRH-stimulated peak	
	LH (IU/L)	FSH (IU/L)	LH (IU/L)	FSH (IU/L)	LH (IU/L)	FSH (IU/L)	LH (IU/L)	FSH (IU/L)
T ₁ (<2.6 yr)	<0.6	1.0 (1.0-1.4)	N/A	N/A	<0.6	3.7 (1.0-8.3)	N/A	N/A
T ₁ ₂	<0.6	1.1 (1.1-1.6)	2.2 (1.1-3.3)	5.7 (2.4-10.6)	<0.6	1.6 (1.0-3.4)	2.1 (0.6-4.2)	11.7 (1.9-27.1)
T _{II}	1.3 (0.6-2.7)	1.8 (1.0-4.3)	15.6 (1.9-31.0)	3.6 (1.4-10.2)	1.0 (0.6-?)	2.3 (1.0-4.8)	5.3 (0.6-12.5)	6.5 (1.8-13.2)
T _{III}	1.4 (0.6-2.5)	2.1 (1.0-5.5)	16.1 (7.3-32.0)	4.2 (1.1-13.0)	2.9 (0.6-5.0)	3.9 (2.6-5.1)	21.0 (14.6-31.0)	7.9 (5.9-12.0)
T _{IV}	1.6 (0.7-2.5)	2.1 (1.0-5.2)	17.3 (12.0-28.0)	4.8 (1.7-12.0)	3.1 (1.0-6.0)	4.0 (1.5-7.2)	26.2 (10.4-54.5)	8.6 (4.0-18.0)
T _V	4.7 (2.4-8.2)	3.2 (1.2-5.7)	28.9 (9.5-56.3)	5.3 (1.8-12.0)	5.7 (0.6-15.4)	4.1 (1.0-7.3)	37.9 (9.7-114.0)	9.2 (2.8-18.8)

Turnaround time:

Same day

Clinical information

LH or hLH (Luteinising Hormone) is a glycoprotein, synthesised & secreted by the anterior pituitary, whose main function is to stimulate steroid production in the ovary and testis. LH production is low in childhood, increasing to adult levels during puberty. Levels in adult males are relatively constant under feedback control, but levels in adult females undergo cyclical variation, reaching very high values during the mid-cycle peak. After the menopause levels are persistently elevated. Since normal levels in childhood are low, stimulation tests using LHRH are needed to investigate hypofunction.

To interpret these results please see the online Dynamic Function Handbook.

Factors known to significantly affect the results

- Samples collected into EDTA and citrate must not be used. This is due to their chelating action upon the Ruthenium used within the assay.

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- This assay should not be used to measure hLH concentrations during pregnancy or immediately post-partum interferes due to interference from hCG.

Grossly haemolysed samples are unsuitable for analysis.

(Last updated November 2019)