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HOUSE of DIAGNOSTICS

Patient Name :	Demo Patient Name	**Lab No :**	Demo Visit No
Age / Sex :	31 Y / F	**Registration On :**	29-Apr-25 11:41
Referred By :	DEMO HOSPITAL	**Patient ID :**	UHID.DEMO.001
Centre :	HOD Head Office		

Glucose Fasting — Sodium Fluoride Sample

Accession No: DEMO_BARCODE **Collected On:** 29-Apr-25 11:41 **Received On:** 29-Apr-25 12:37 **Approved On:** 29-Apr-25 14:14

Observation	Result	Unit	Biological Ref. Interval	Method
Blood Sugar Fasting	95	mg/dL	70 - 100	GOD/POD, colorimetric

Sample Type: Sodium Fluoride; A blood sample will be taken after 8 - 12 hours of fasting.
Method: Glucose oxidase hydrogen peroxidase
Technology: Dry Chemistry (VITROS MicroSlide, MicroSensor & Intellicheck Technology)
Analyzer: Fully Automated Integrated Biochemistry & ImmunoAssay Analyzer: VITROS 5600

Remarks: *Please correlate clinically*
Note: Blood glucose level is maintained by a very complex integrated mechanism involving a critical interplay of the release of hormones and action of enzymes on key metabolic pathways. If postprandial glucose is lower than fasting glucose, it is termed as postprandial reactive hypoglycemia (PRH). The possible cause of PRH are high insulin sensitivity, exaggerated response of insulin and glucagon-like peptide 1, defects in counter-regulation, very lean individuals, anxious individuals, after massive weight reduction, women with lower body overweight physical activity prior test, hypoglycemic medication, deliberately eating less or eat a non-carbohydrate meal before testing.

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Prolactin — Serum Sample

Accession No: DEMO_BARCODE **Collected On:** 29-Apr-25 11:41 **Received On:** 29-Apr-25 14:07 **Approved On:** 29-Apr-25 17:14

Observation	Result	Unit	Biological Ref. Interval	Method
Prolactin	8.5	ng/mL	2.8-29.2	CLIA

Clinical Significance of Prolactin:
Consistently elevated serum prolactin levels greater than 30 ng/mL in the absence of pregnancy and postpartum lactation are indicative of hyperprolactinemia, which is the most common hypothalamic-pituitary dysfunction encountered in clinical endocrinology. Hyperprolactinemia often results in galactorrhea, amenorrhea, and infertility in females, and in impotence and hypogonadism in males. Renal failure, hypothyroidism, and prolactin-secreting pituitary adenomas are also common causes of abnormally elevated prolactin levels.

Remarks: Please correlate results clinically.

Estradiol — Serum Sample

Accession No: DEMO_BARCODE **Collected On:** 29-Apr-25 11:41 **Received On:** 29-Apr-25 14:07 **Approved On:** 29-Apr-25 17:14

Observation	Result	Unit	Biological Ref. Interval	Method
Estradiol [E2]	51.088	pg/mL		CLIA

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Biological Reference Range for Estradiol(E2):
Males : 11.6 - 41.2
Menstruating Females : (By day in cycle relative to LH peak)
- Follicular Phase (-12 to -4 days) : 18.9 - 246.7
- Midcycle (-3 to +2 days) : 35.5 - 570.8
- Luteal Phase (+4 to +12 days) : 22.4 - 256.0

Postmenopausal Females (Untreated) : ND* - 44.5
* ND = Not Detectable

Clinical Significance of Estradiol (E2):
The measurement of Estradiol is important for the evaluation of normal sexual development (menarche), causes of infertility (anovulation, amenorrhoea, dysmenorrhoea). Normal estradiol levels are lowest during menstrual cycle.

Sample Type: Serum
Technology: VITROS MicroWell, MicroSensor and Intellicheck Technology
Analyzer: Fully Automated Integrated Biochemistry and Immunology Analyzer: VITROS 5600

Remarks: Please correlate results with clinical conditions.
Drugs of estradiol derivatives can interfere with estradiol measurement immunoassay, resulting in falsely estradiol results.
Certain drugs and clinical conditions are known to alter estradiol concentrations in vivo.
Biotin levels in serum remain elevated for up to 24 hours after oral or intravenous biotin administration.

DHEA Sulphate — Serum Sample

Accession No: DEMO_BARCODE **Collected On:** 29-Apr-25 11:41 **Received On:** 29-Apr-25 14:06 **Approved On:** 29-Apr-25 15:27

Observation	Result	Unit	Biological Ref. Interval	Method
DHEA Sulphate	149.0	ug/dL	23-266	CLIA

Clinical Significance:
* DHEA-Sulphate is the most abundant adrenal androgen in the circulation. Most of the circulating DHEA-S originates from either direct adrenal secretion or by peripheral sulfation of DHEA secreted by the adrenal cortex. Unlike other adrenal steroids eg. cortisol, it does not exhibit diurnal variation or circulate in bound state.
* Increased levels are seen in adrenal tumors, congenital adrenal hyperplasia and hCG producing tumors in men. May be slightly elevated with polycystic ovaries.

Biological Reference Interval is suggested as per Beckman Coulter Access DHEA-S IFU REF: A10826

Age (In Years)	95% Reference Interval (µg/dL)	
	Male	Female
18-21	24-537	51-321
21-30	85-690	18-391
31-40	106-464	23-266
41-50	70-495	19-231
51-60	38-313	8-188
61-70	24-244	12-133
≥71	5-253	7-177

Remarks: *Please correlate results with clinical conditions.*

Free Thyroid Test [FT3,FT4,TSH] — Serum Sample

Accession No: DEMO_BARCODE **Collected On:** 29-Apr-25 11:41 **Received On:** 29-Apr-25 14:07 **Approved On:** 29-Apr-25 15:35

Observation	Result	Unit	Biological Ref. Interval	Method
Free Triiodothyronine [FT3]	3.39	pg/mL	2.77 - 5.27	CLIA
Free Thyroxine [FT4]	1.15	ng/dL	0.78 - 2.19	CLIA
Thyroid Stimulating Hormone (TSH)	2.76	mIU/L	0.46-4.68	CLIA

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Note:

1. **TSH Levels are subject to circadian variation**, reaching peak levels between 2-4 AM & the minimum between 6-10 PM. The variation is of the order of 50-206% Hence time of the day has influence on the measured serum TSH concentrations (Reference:Tietz Textbook of Clinical Chemistry & Molecular Diagnostics - 5th Edition Page 123). Fluctuating TSH value must be Clinically correlated.
2. Circulating TSH levels are known to show a circadian rhythm & diurnal variation. The diagnosis based on one TSH value which fluctuates is not reliable. Clinical correlation is mandatory.
3. Values <0.03 ulU/mL need to be clinically correlated due to presence of a rare TSH variant in some individuals.

Remarks: Please correlate results clinically.

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Androstenedione — Serum Sample

Accession No: DEMO_BARCODE **Collected On:** 29-Apr-25 11:41 **Received On:** 29-Apr-25 14:06 **Approved On:** 29-Apr-25 16:03

Observation	Result	Unit	Biological Ref. Interval	Method
Androstenedione	0.88	ng/mL	0.37-2.25	CLIA

Clinical Significance: Androstenedione is a steroid which serves as a major precursor for testosterone and Estrone. Its clinical interest derives from the fact that is often elevated in cases of Hirsutism and virilization . Unlike the adrenal androgens DHEA and DHEA - Sulphate, circulating Androstenedione originates both from the adrenals and the ovaries. Plasma levels increase steadily from about the 7th year of life, then gradually decline after the 3rd decade. Androstenedione exhibits a diurnal variation, being highest in the morning.

Pediatric Reference Ranges:

Tanner Stage	Males	Females
Stage I	<0.30	<0.30-0.48
Stage II	<0.30-0.55	<0.30-1.41
Stage III	<0.30-0.69	<0.30-1.80
Stage IV	<0.30-1.36	<0.30-2.32
Stage V	<0.30-1.76	<0.30-3.21

Clinical Use:

- Diagnose Hirsutism
- Polycystic Overian disease
- Virilization and Congenital Adrenal Hyperplasia
- Congenital Adrenal Hyperplasia
- Adrenal tumors
- Cushing's disease Polycystic Overian Disease
- Idiopathic hirsutism
- Addison's disease

Remarks: Please correlate results with clinical conditions.

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Anti Mullerian Hormone

Serum Sample

Accession No: DEMO_BARCODE **Collected On:** 29-Apr-25 11:41 **Received On:** 29-Apr-25 14:06 **Approved On:** 29-Apr-25 15:27

Observation	Result	Unit	Biological Ref. Interval	Method
Anti Mullerian Hormone	6.09	ng/mL	0.07-7.35	CLIA

Biological Reference Interval:
Optimal Fertility : 4.0 - 6.8 ng/mL
Satisfactory Fertility : 2.2 - 4.0 ng/mL
Low Fertility : 0.3 - 2.2 ng/mL
Very Low / Undetectable : 0.0 - 0.3 ng/mL
High Level : >6.8 ng/mL

Suggested Reference Ranges as Per Beckman Coulter AMH IFU:

Gender	Reference Group Age Range (years)	95% Reference Interval (ng/mL)
Females	18-25	0.96-13.34
Females	26-30	0.17-7.37
Females	31-35	0.07-7.35
Females	36-40	0.03-7.15
Females	41-45	<3.27
Females	≥ 46	<1.15
Males	>18	0.73-16.05

Clinical Significance :
AntiMullerian hormone (AMH), also known as mullerian-inhibiting substance, is a dimeric glycoprotein hormone belonging to the transforming growth factor-beta family. It is produced by sertoli cells of the testis in males and by ovarian granulosa cells in females. In women, antimullerian hormone (AMH) levels represent the ovarian follicular pool and could be a useful marker of ovarian reserve. A serum level of AMH strongly correlates with antral follicle count and reflect the size of primordial follicle pool thus may be useful as a predictor of ovarian responsiveness. AMH may permit the identification of both the extremes of ovarian stimulation thus a possible role for its measurement has been suggested in the individualization of treatment strategies.

Clinical Applications :
*To assess ovarian status including follicle development, ovarian reserve, and ovarian responsiveness, as part of evaluation for infertility and assisted reproduction protocols
*To assess menopausal status, including premature ovarian failure.
*To assess ovarian function in patients with polycystic ovarian syndrome.
*To evaluate infants with ambiguous genitalia and other intersex conditions.
*To evaluate testicular function in infants and children.
*To diagnose and monitor patients with antimullerian hormone-secreting ovarian granulosa cell tumors.

Remarks: Please correlate results with clinical conditions.

FSH-LH Ratio

Serum Sample

Accession No: DEMO_BARCODE **Collected On:** 29-Apr-25 11:41 **Received On:** 29-Apr-25 14:07 **Approved On:** 29-Apr-25 17:14

Observation	Result	Unit	Biological Ref. Interval	Method
FSH	4.40	mIU/mL	Follicular Phase:1.98-11.6 MidCycle Peak: 5.14-23.4 Luteal Phase: 1.38-9.58 Post-Menopausal:21.5-131	CLIA
Luteinizing hormone (LH)	8.22	mIU/mL	Follicular Phase: 1.9-12.5 Luteal Phase: 0.5-16.9 Midcycle Peak: 8.7-76.3 Pregnant: 0.1-1.5 Post Menopausal: 15.9-54.0	CLIA
FSH-LH Ratio	0.54	Ratio		Calculated
LH-FSH Ratio	1.87	Ratio		Calculated

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LH Biological Reference Range:
Follicular phase : 1.9 - 12.5
Luteal phase : 0.5 - 16.9
Post menopausal : 15.9 - 54.0
Male (20 -70 years) : 1.5 - 9.3
Male (>70years) : 3.1 - 34.6
Midcycle peak : 8.7 - 76.3
Pregnant : 0.1 - 1.5
Children : 0.1 - 6.0

FSH Biological Reference Range:
Follicular Phase : 2.5 - 10.2
Luteal Phase : 1.5 - 9.1
Post Menopausal : 23.0 - 116.3
Male (13 -70 Years) : 1.4 - 18.1
Midcycle Peak : 3.4 - 33.4
Pregnant : < 3.0

Sample Type: Serum
Technology: VITROS MicroWell, MicroSensor and Intellicheck.
Analyzer: Fully Automated Integrated Biochemistry and ImmunoAssay Analyzer: Vitros 5600

Remarks: Please correlate results clinically.

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5-Alpha DHT (Di -Hydrotestosterone) — Serum Sample

Accession No: DEMO_BARCODE **Collected On:** 29-Apr-25 11:41 **Received On:** 29-Apr-25 14:06 **Approved On:** 30-Apr-25 15:47

Observation	Result	Unit	Biological Ref. Interval	Method
5-Alpha-Dihydrotestosterone (DHT)	**603.09**	pg/mL	Pre-Menopausal:78-536 Post-Menopausal:33-276	ELISA

Clinical Significance of 5-alpha-Dihydrotestosterone (DHT)

1. Assess Pseudohermaphroditism
2. Diagnose 5alpha-reductase deficiency
3. Assess efficacy of drugs that inhibit 5alpha -reductase

Increased Levels Observed In

- Hirsutism
- Chronic anovulatory syndrome
- High 5alpha -reductase activity

Decreased Levels Observed In

- Hypogonadism
- 5alpha -reductase deficiency

Advise:*Please correlate results clinically*.

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Androgen Index

Accession No: DEMO_BARCODE **Collected On:** 29-Apr-25 11:41 **Received On:** 29-Apr-25 14:06 **Approved On:** 29-Apr-25 15:27

Observation	Result	Unit	Biological Ref. Interval	Method
Testosterone	42.9	ng/dL	15-70	CLIA
SHBG (Sex Hormone Binding Globulin)	28.9	nmol/L	18.2-135.5	CLIA
Free Androgen Index	5.15	Ratio	0.4-8.4	Calculated

Biological Reference Interval for Total Testosterone as suggested vide reference of *Tietz Fundamentals of Clinical Chemistry and Molecular Diagnostics 7th edition.*

Reference Range	Value in ng/dL	
Age	**Male**	**Female**
Prepubertal Child		
1-5 Months	1-177	1-5
6-11 Months	2-7	2-5
1-5 Years	2-25	2-10
6-9 Years	3-30	2-20
Puberty, Tanner Stage		
Tanner Stage 1	2-23	2-10
Tanner Stage 2	5-70	5-30
Tanner Stage 3	15-280	10-30
Tanner Stage 4	105-545	15-40
Tanner Stage 5	65-800	10-40
Adults		
Adult	260-1000	15-70

Remarks: Please correlate results with clinical conditions.

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Homeostatic Model Assessment for Insulin Resistance

Serum Sample

Accession No: DEMO_BARCODE **Collected On:** 29-Apr-25 11:41 **Received On:** 29-Apr-25 14:07 **Approved On:** 29-Apr-25 20:16

Observation	Result	Unit	Biological Ref. Interval	Method
Homa-IR Score	1.10	Index	<2.5	HOMA-IR
Beta Cell Function (%B)	90.7	%		HOMA-IR
Insulin Sensitivity (%S)	90.6	%		HOMA-IR
Test Details (For Reference Only)				
Fasting Glucose Level [Fluoride Sample]	95	mg/dL	70-100	GOD/POD
Fasting Insulin Level [Serum Sample]	8.39	µIU/mL	2.3-26	CLIA

Interpretation: Homeostatic model assessment (HOMA) is a method for assessing beta cell function (%B) and insulin sensitivity (%S) from fasting glucose and insulin concentrations. HOMA can be used to track changes in insulin sensitivity and beta cell function to examine natural history of diabetes. Insulin sensitivity is reduced in normal subjects having first degree relative with type 2 diabetes compared with control subjects. Changes in beta cell sensitivity in subjects on insulin secretogogues may be useful in determining beta cell function over a period.

Remarks: *Please correlate results with clinical conditions.*

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