

ComprehensivePLUS Hormone Profile with hGH

Doctor ID 6206		Patient Name Doe, Jane		
Age 44	Sex F	Date of Birth	Accession # 5001	Test Code 4078
Date Collected		Date Received 11/1/2009	Date Reported 11/9/2009	Tech dh
Comments				

Doctor Name and Address:

Sample Report

Fax:

Phone:

Amount Excreted in 24hrs		Adult Reference Range		
CREATININE	gm/24hr	0.5-2.0 gm/24hr		
TOTAL VOLUME	1500 mL			
STEROID	Amount Excreted in µg/24hr	Phase	Day	Female µg/24hr
ESTRONE	11.9	Luteal	17-26	3.3 - 44.6 *
		Follicular	27-11	2.0 - 39
		Mid-Cycle	12-16	11.0 - 46
		Post Menopausal		1.0 - 7.0
ESTRADIOL	5.5	Luteal	17-26	1.4 - 12.2 *
		Follicular	27-11	1.0 - 23
		Mid-Cycle	12-16	4.0 - 45
		Post Menopausal		0 - 4
ESTRIOL	6.5	Luteal	17-26	6.1 - 32.4 *
		Follicular	27-11	3.0 - 48
		Mid-Cycle	12-16	20 - 130
		Post Menopausal		0 - 30
Total Estrogens	23.9	Luteal	17-26	10.8 - 89.2 *
		Follicular	27-11	7.0 - 110
		Mid-Cycle	12-16	38 - 221
		Post Menopausal		0 - 41
Estrogen Quotient	0.4	Estriol / (estrone + estradiol)		>1.0
2-OH ESTRONE	9.8	Luteal	17-26	3.8 - 38.1 *
		Post Menopausal		0.2 - 5.4 *
16α-OH ESTRONE	2.8	Luteal	17-26	2.1 - 7.9 *
		Post Menopausal		0.15 - 3.5 *
2 / 16α Ratio	3.5	Luteal	17-26	1.8 - 5.5 *
		Post Menopausal		0.6 - 5.0 *
4-OH ESTRONE	1.8	Luteal	17-26	0.8 - 5.9
		Post Menopausal		0.05 - 1.1
2-METHOXYESTRONE	7.9	Luteal	17-26	2.2 - 14.4 *
		Post Menopausal		0.3 - 4.1
2-METHOXYESTRADIOL	0.9	Luteal	17-26	0.1 - 2.2 *
		Post Menopausal		0.03 - 0.54

ComprehensivePLUS Hormone Profile with hGH

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Adult Reference Range
 Female
 µg/24hr

STEROID	Amount Excreted in µg/24hr		Adult Reference Range Female µg/24hr
PREGNANEDIOL (progesterone metabolite)	912	Luteal Follicular Post Menopausal	1450 - 6140 * 0 - 2500 200 - 1000
DHEA	1458		100 - 2000
TESTOSTERONE	12.8		5.0 - 35.0
5α-ANDROSTANEDIOL	30.0		3.0 - 35.0
5β-ANDROSTANEDIOL	68.6		13.0 - 180.0
ANDROSTERONE	4075	HIGH	500 - 3200
ETIOCHOLANOLONE	2828		500 - 5000
PREGNANETRIOL	188		100 -1500
CORTISONE (E)	28	LOW	31-209
CORTISOL (F)	14	LOW	30-170
TETRAHYDROCORTISONE (THE)	825	LOW	1700-4200
ALLO-TETRAHYDROCORTISOL (5α-THF)	488		400-2100
TETRAHYDROCORTISOL (THF)	450	LOW	900-2600
11β-HYDROXYANDROSTERONE	150	LOW	398-1471
11β-HYDROXYETIOCHOLANOLONE	19	LOW	153-827
ALDOSTERONE	3.0		Normal Diet: 6.0-25.0 Low Salt: 17.0-44.0 High Salt: 0.0-6.0
ALLO-TETRAHYDROCORTICOSTERONE (5α-THB)	120	LOW	130-600
TETRAHYDROCORTICOSTERONE (THB)	28	LOW	30-240
11-DEHYDROTETRAHYDROCORTICOSTERONE (THA)	34	LOW	62-293

* Reference range revised based on recent reference range study (September 28, 2006)



801 SW 16th St Suite 126
 Renton WA 98057
 425.271.8689 • 425.271.8674 (Fax)

ComprehensivePlus Hormone Profile w/hGH

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Urinary hGH	Amount Excreted in pg/24hr	Adult Reference Range pg/24hr
Human Growth Hormone	1536	1065 - 4722

Urinary Thyroid	Amount Excreted in ng/24hr	Adult Reference Range ng/24hr
Free T3	300 Low	470 - 1750
Free T4	563	430 - 3200

Urinary Mineral	Amount Excreted in mmol/24hr	Adult Reference Range mmol/24hr
Sodium	180	40 - 220
Potassium	72	25 - 150
Sodium/Potassium Ratio	2.5	1.2 - 4.8

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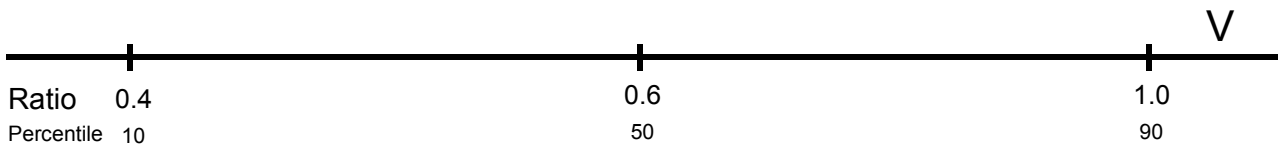
ENZYME ACTIVITY PHENOTYPE ASSESSMENT

5- α -REDUCTASE

Androsterone/Etiocholanolone Ratio: 1.44



Allo-tetrahydrocortisol/tetrahydrocortisol Ratio: 1.08



Elevated 5- α -reductase activity is associated with polycystic ovary syndrome and hirsutism in women, benign prostate hypertrophy and premature baldness in men, and obesity and insulin resistance in both genders. Low 5- α -reductase activity may result in reduced conversion of testosterone to DHT and undervirilization in males.

11- β -hydroxysteroid dehydrogenase I & II

Cortisol/Cortisone Ratio: 0.48



Tetrahydrocortisol+allo-tetrahydrocortisol/Tetrahydrocortisone Ratio: 1.14

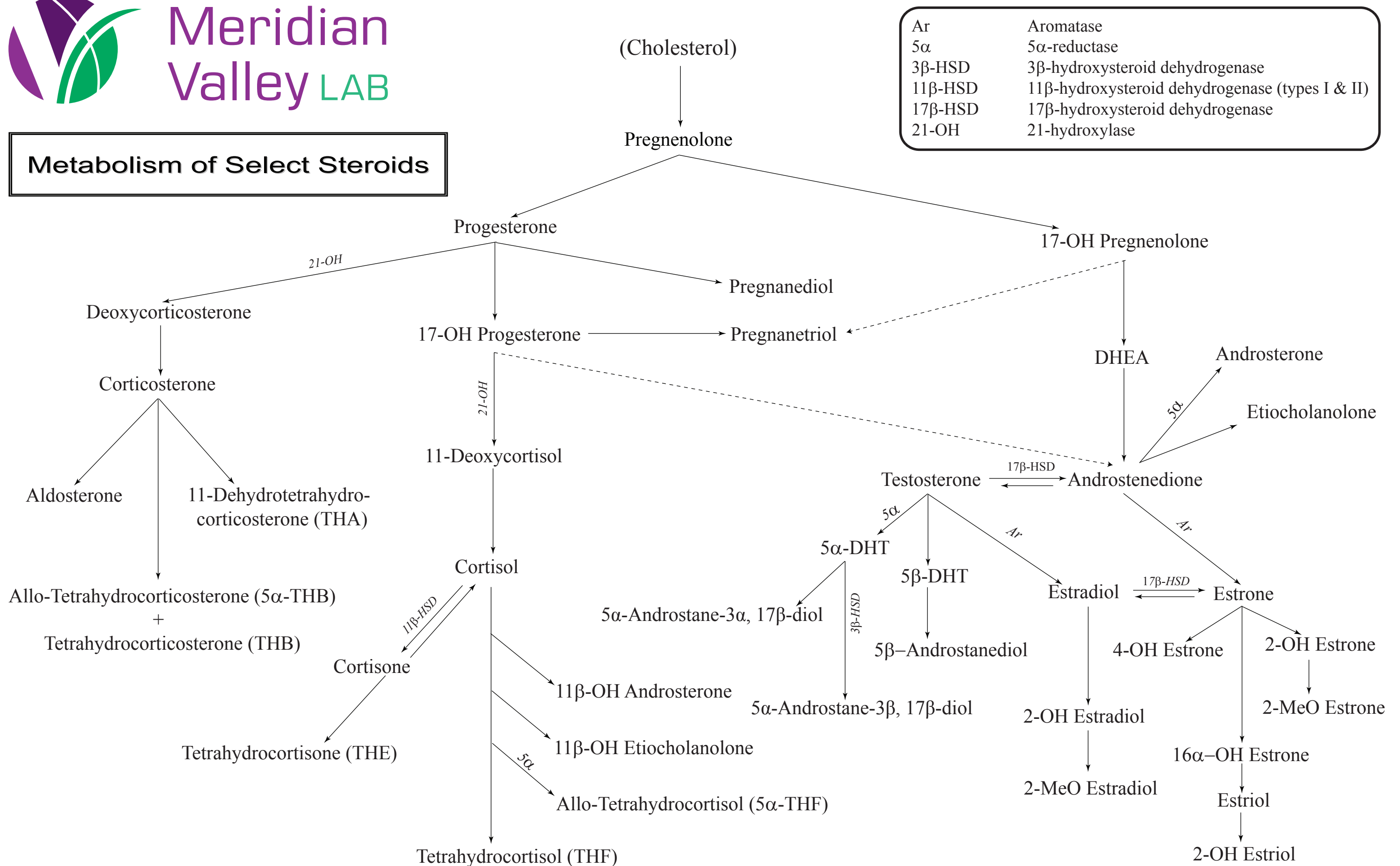


Low ratios are associated with obesity and insulin resistance

Elevated ratios are associated with low-renin hypertension, high dose licorice, and cortisol administration.



Metabolism of Select Steroids





24-Hour Comprehensive Steroid Hormone Profile Interpretation

Estrogens: Estrone (E1), Estradiol (E2) and Estriol (E3)

(Results fluctuate during the menstrual cycle; results are lower in post-menopausal women.)

Elevated In Women: Possible Causes

Common

Hormone replacement therapy (oral E2 dose >0.25 mg/day)

* Higher transdermal doses may be used without exceeding the normal ranges

Normal pregnancy in a pregnant woman

Uncommon

Estrogen hypersecretion (high urinary concentration + low or low normal plasma concentration)¹

Ovarian or adrenocortical tumors in a non-pregnant woman

Adrenocortical hyperplasia in a non-pregnant woman

Metabolic or hepatic disorder in a non-pregnant woman (i.e. cirrhosis)

Treatment for infertility

(Elevated E1 & E2 are associated with a moderate increase in breast cancer risk.)

Low In Women: Possible Causes

Common

Menopause or peri-menopause

Uncommon

Primary ovarian insufficiency, due to Stein-Leventhal syndrome

Secondary ovarian insufficiency, due to pituitary or adrenal hypofunction

Ovarian agenesis

Anorexia nervosa

Other metabolic disturbances

Elevated In Men: Possible Causes

Common

Testosterone supplementation (>75 mg/day)

¹ Contact MVL for a monograph by Dr. Wright on treatment of estrogen hypersecretion

Intermediate

Excessive aromatase activity (may be associated with obesity)

Uncommon

DHEA supplementation

Testicular, adrenal or hepatic tumors (may be associated with gynecomastia)

Hepatic cirrhosis

Testosterone

(Adult testosterone levels decline with aging. Our normal ranges are for young adults.)

Elevated In Women: Possible Causes

Common

Testosterone supplementation

Uncommon

Polycystic Ovary Syndrome (associated with hirsutism)

Congenital adrenal hyperplasia

(Pregnanetriol & DHEA may also be elevated)

Adult-onset adrenal hyperplasia

(Pregnanetriol & DHEA may also be elevated)

Ovarian neoplasm

Pregnenolone supplementation (high dose)

Elevated In Men: Possible Causes

Common

Testosterone supplementation (>75 mg/day)

Uncommon

Pregnenolone supplementation (high dose)

XYY syndrome

Low In Men: Possible Causes

Intermediate

Excessive aromatase activity (testosterone -> estradiol)

Uncommon

Hypogonadism

(May be associated with infertility & impotence)

Klinefelter syndrome

Pregnanediol

(Results fluctuate during the menstrual cycle; results are lower in post-menopausal women.)

Elevated In Women: Possible Causes

Common

- Progesterone supplementation
- Pregnancy

Uncommon

- Diffuse thecal luteinization
- Luteinized granulosa
- Theca-cell tumors
- Metastatic ovarian cancer
- High-dose pregnenolone supplementation

Low In Women: Possible Causes

Common

- Peri-menopause

Uncommon

(In non-pregnant women)

- Amenorrhea
- Anovulation
- Menstrual abnormalities

Elevated In Men: Possible Causes

Uncommon

- High-dose pregnenolone supplementation
- Testicular tumors

DHEA

(Adult DHEA levels decline with aging. Our normal ranges are for young adults.)

Elevated In Women: Possible Causes

Uncommon

- DHEA supplementation (androsterone and etiocholanolone may also increase)
- Congenital adrenal hyperplasia (pregnanetriol may also be elevated)
- Adult-onset adrenal hyperplasia (pregnanetriol may also be elevated)
(May present as anxiety)
- Adrenal neoplasm
- High-dose pregnenolone supplementation

(Elevated DHEA is associated with hirsutism.)

Low In Women: Possible Causes

Common

Age > 40 yr.

Intermediate

Adrenal insufficiency

Elevated In Men: Possible Causes

Uncommon

DHEA supplementation (androsterone and etiocholanolone may also increase)

Congenital adrenal hyperplasia (pregnanetriol may also be elevated)

Adult-onset adrenal hyperplasia (pregnanetriol may also be elevated)

(May present as anxiety)

Adrenal neoplasm

High-dose pregnenolone supplementation

Low In Men: Possible Causes

Common

Age > 40 yr.

Intermediate

Adrenal insufficiency

Etiocholanolone and Androsterone

(Androsterone and etiocholanolone are in the 17-ketosteroids group of steroid metabolites, which also includes DHEA, pregnanetriol and pregnanediol.)

Elevated: Possible Causes

Common

DHEA supplementation (esp. females > 25 mg/day; males > 50 mg/day)

Uncommon

Androgen producing gonadal tumors

Congenital adrenal hyperplasia

Adult-onset adrenal hyperplasia

Serious illnesses (burns and others)

Low: Possible Causes

Common

Age > 40 yr.

Uncommon

Adrenal insufficiency

Anorexia nervosa

Panhypopituitarism
Aging

Pregnanetriol

Elevated: Possible Causes

Uncommon

Adrenogenital syndrome (congenital adrenal hyperplasia), which is marked by excessive adrenal androgen secretion and virilization. Women with this condition fail to develop normal secondary sex characteristics and show marked masculinization of external genitalia at birth. Men usually appear normal at birth but later develop signs of somatic and sexual precocity.

Adult-onset adrenal hyperplasia (may present as anxiety)

High-dose pregnenolone supplementation

Cortisol and Cortisone

Elevated: Possible Causes

Common

Emotional or physical stress
Intensive physical exercise

Uncommon

Cushing's syndrome (hypercortisolism)
Cushing's disease (hypercortisolism 2^o to excess ACTH production by pituitary adenoma)
Ectopic ACTH production

Low: Possible Causes

Intermediate

Adrenal insufficiency
(follow-up with ACTH challenge test or multi-point serum or saliva cortisol)

Aldosterone

(Aldosterone excretion varies inversely with salt intake.)

Elevated: Possible Causes

Common

Low salt diet

Uncommon

Primary aldosteronism with low renin hypertension

(associated with polyuria and hypokalemia)
High-dose pregnenolone supplementation
May be elevated in patients taking spironolactone, an aldosterone antagonist

Low: Possible Causes

Common

High salt diet

Uncommon

Adrenal insufficiency

(In extreme cases may be associated with fatigue, hypotension, dehydration and polyuria)

