dutchtest COMPLETE

Ordering Provider:
Precision Analytical

PATIENT INFORMATION

Tanya, Amenorrhea
123 A Street
Sometown, CA 90266

DOB: 1996-01-01
Age: 29
Sex: Female
Last Menstrual Period:

Case # 6

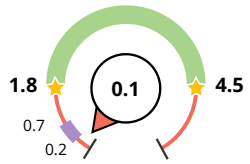
Collection Dates:
2025-10-17 (U3 U4)
2025-10-18 (U1 U2)

Hormone Testing Summary

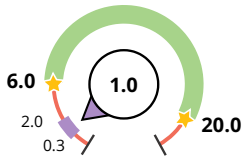
Optimal Luteal Range · Postmenopausal Range · Out of Range · Edge of Range

For an expanded view of results, see pages 2 through 6. For interpretive support, see *About Your Results* pages.

ESTROGEN & PROGESTERONE PRODUCTION



Estradiol (E2)



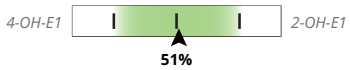
Progesterone (P4)
Serum Equivalent*, ng/mL

*P4 Serum Equivalent (ng/mL) is a calculated value based on urine pregnanediol.

ESTROGEN METABOLISM

2-OH / 16-OH-E1 Balance

2-OH / 4-OH-E1 Balance

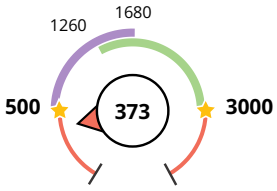


Phase 1 Metabolism

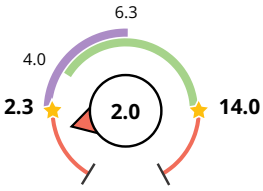
Methylation Activity
2-Methoxy / 2-OH-E1

Phase 2 Methylation

ANDROGEN PRODUCTION

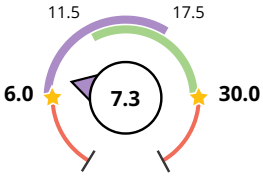


Total DHEA Production
DHEA-S + Etiocholanolone + Androsterone



Testosterone

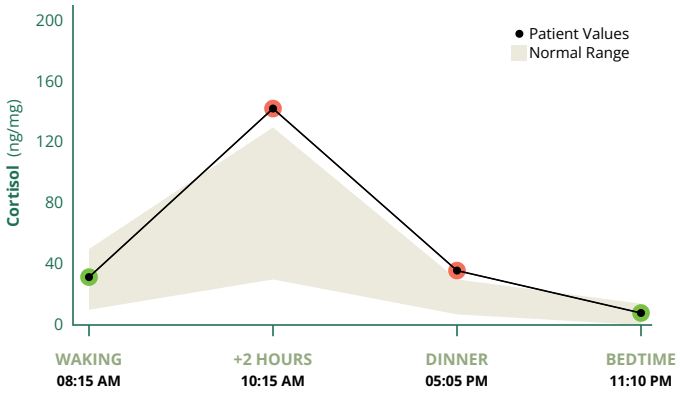
ANDROGEN METABOLISM



5a-Androstanediol
Cellular DHT Production

5a-Metabolism (Androgens)
Androsterone / Etiocholanolone

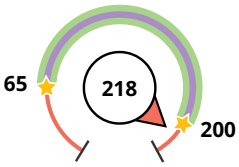
DAILY FREE CORTISOL PATTERN



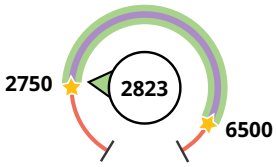
CORTISOL METABOLISM

Cortisol Clearance Rate
THF + THE / Cortisol + Cortisone

Cortisol Metabolism



24 Hour Free Cortisol
Sum of all Values

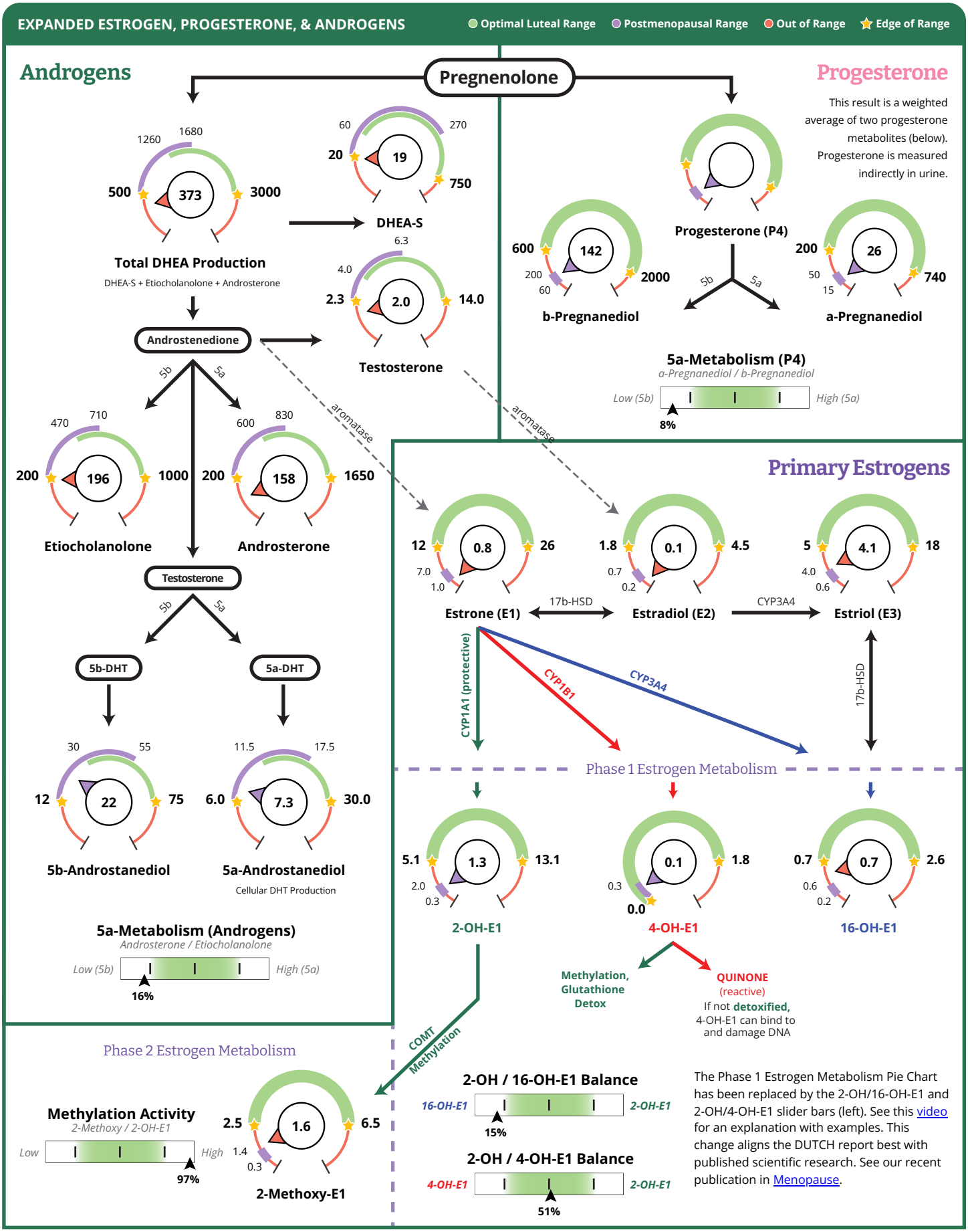


Metabolized Cortisol
Total Cortisol Production (THF + THE)

Organic Acid Tests (OATs) Suggests the Following Possible Imbalances | see page 6 for details

Watch · Needs Attention

- Neurotransmitters


EXPANDED ESTROGEN, PROGESTERONE, & ANDROGENS
Optimal Luteal Range
Postmenopausal Range
Out of Range
Edge of Range
Androgens
Pregnenolone
Progesterone
This result is a weighted average of two progesterone metabolites (below). Progesterone is measured indirectly in urine.
1260
1680
500
373
3000
Total DHEA Production
DHEA-S + Etiocholanolone + Androsterone
60
270
20
19
750
DHEA-S
6.3
4.0
2.3
2.0
14.0
Testosterone
Androstenedione
5b
5a
aromatase
470
710
200
196
1000
Etiocholanolone
600
830
200
158
1650
Androsterone
Testosterone
5b-DHT
5a-DHT
30
55
12
22
75
5b-Androstanediol
11.5
17.5
6.0
7.3
30.0
5a-Androstanediol
Cellular DHT Production
5a-Metabolism (Androgens)
Androsterone / Etiocholanolone
Low (5b)
High (5a)
16%
Progesterone (P4)
600
142
200
60
2000
b-Pregnanediol
200
26
50
15
740
a-Pregnanediol
5a-Metabolism (P4)
a-Pregnanediol / b-Pregnanediol
Low (5b)
High (5a)
8%
Primary Estrogens
12
0.8
26
7.0
1.0
Estrone (E1)
17b-HSD
1.8
0.1
4.5
0.7
0.2
Estradiol (E2)
CYP3A4
5
4.1
18
4.0
0.6
Estriol (E3)
CYP1A1 (protective)
CYP1B1
CYP3A4
17b-HSD
Phase 1 Estrogen Metabolism
5.1
1.3
13.1
2.0
0.3
2-OH-E1
0.1
1.8
0.3
0.0
4-OH-E1
0.7
0.7
2.6
0.6
0.2
16-OH-E1
Methylation, Glutathione Detox
QUINONE
(reactive)
If not detoxified, 4-OH-E1 can bind to and damage DNA
COMT
Methylation
Phase 2 Estrogen Metabolism
Methylation Activity
2-Methoxy / 2-OH-E1
Low
High
97%
2.5
1.6
6.5
1.4
0.3
2-Methoxy-E1
2-OH / 16-OH-E1 Balance
16-OH-E1
2-OH-E1
15%
2-OH / 4-OH-E1 Balance
4-OH-E1
2-OH-E1
51%
The Phase 1 Estrogen Metabolism Pie Chart has been replaced by the 2-OH/16-OH-E1 and 2-OH/4-OH-E1 slider bars (left). See this video for an explanation with examples. This change aligns the DUTCH report best with published scientific research. See our recent publication in Menopause.

dutchtest® COMPLETE

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DOB: 1996-01-01
Age: 29
Sex: Female
Last Menstrual Period:

Collection Times:
2025-10-18 08:15AM (U1)
2025-10-18 10:15AM (U2)
2025-10-17 05:05PM (U3)
2025-10-17 11:10PM (U4)

Ordering Provider:

Precision Analytical

Sex Hormones & Metabolites

TEST		RESULT	UNITS	LUTEAL*	POSTMENOPAUSAL
Progesterone Metabolites (Urine)					
b-Pregnanediol	Below luteal range	142.0	ng/mg	600 - 2000	60 - 200
a-Pregnanediol	Below luteal range	26.4	ng/mg	200 - 740	15 - 50
Estrogens and Metabolites (Urine)					
Estrone (E1)	Below luteal range	0.78	ng/mg	12 - 26	1.0 - 7.0
Estradiol (E2)	Below luteal range	0.12	ng/mg	1.8 - 4.5	0.2 - 0.7
Estriol (E3)	Below luteal range	4.1	ng/mg	5 - 18	0.6 - 4.0
2-OH-E1	Below luteal range	1.27	ng/mg	5.1 - 13.1	0.3 - 2.0
4-OH-E1	Within luteal range	0.14	ng/mg	0 - 1.8	0 - 0.3
16-OH-E1	Below luteal range	0.65	ng/mg	0.7 - 2.6	0.2 - 0.6
2-Methoxy-E1	Below luteal range	1.58	ng/mg	2.5 - 6.5	0.3 - 1.4
2-OH-E2	Low end of luteal range	0.49	ng/mg	0 - 3.1	0 - 0.52
4-OH-E2	Within luteal range	0.06	ng/mg	0 - 0.52	0 - 0.12
Total Estrogen	Below range	9.2	ng/mg	35 - 70	3.5 - 15
Metabolite Ratios (Urine)					
2-OH / 16-OH-E1 Balance	Below range	1.95	ratio	2.69 - 11.83	
2-OH / 4-OH-E1 Balance	Within range	9.07	ratio	5.4 - 12.62	
2-Methoxy / 2-OH Balance	Above range	1.24	ratio	0.39 - 0.67	
Androgens and Metabolites (Urine)				**Range**	
DHEA-S	Below range	19.2	ng/mg	20 - 750	
Androsterone	Below range	157.7	ng/mg	200 - 1650	
Etiocholanolone	Below range	196.3	ng/mg	200 - 1000	
Testosterone	Below range	1.99	ng/mg	2.3 - 14	
5a-DHT	Within range	1.4	ng/mg	0 - 6.6	
5a-Androstanediol	Within range	7.3	ng/mg	6 - 30	
5b-Androstanediol	Within range	22.3	ng/mg	12 - 75	
Epi-Testosterone	Below range	1.2	ng/mg	2.3 - 14	

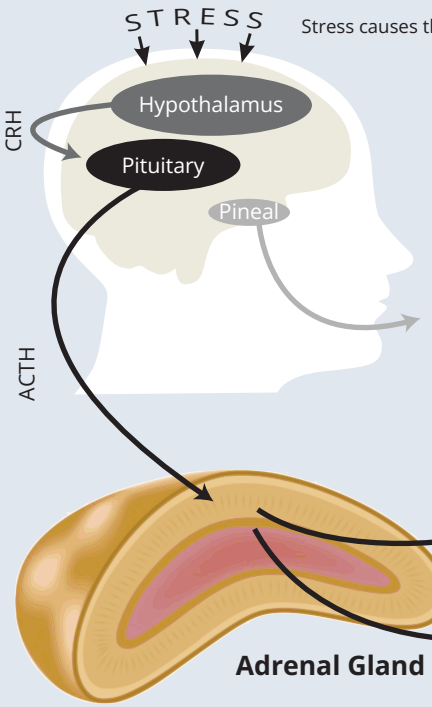
* The Luteal Range represents the expected premenopausal luteal range, collected menstrual cycle days 19-22 of a 28-day cycle. If your patient noted taking oral progesterone, the reference range represents the expected range on 100 - 200 mg of oral micronized progesterone (OMP). The ranges in the table below represent ranges in other times of the cycle your patient may have collected, such as follicular or ovulatory phases.

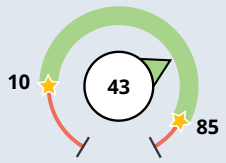
ADDITIONAL NORMAL RANGES	FOLLICULAR	OVULATORY	ON ORAL PG
b-Pregnanediol	100 - 300	100 - 300	2000 - 9000
a-Pregnanediol	25 - 100	25 - 100	580 - 3000
Estrone (E1)	4.0 - 12.0	22 - 68	N/A
Estradiol (E2)	1.0 - 2.0	4.0 - 12.0	N/A

EXPANDED CORTISOL & ADRENAL HORMONES

Optimal Luteal Range | Postmenopausal Range | Out of Range | Edge of Range

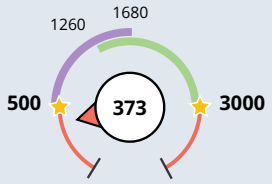
Stress causes the brain to release ACTH, which stimulates the adrenal glands to make hormones including DHEA and Cortisol.





Melatonin - Waking

6-OH-Melatonin-Sulfate



Total DHEA Production

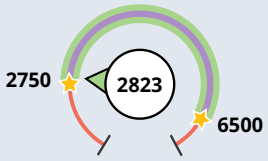
DHEA-S + Etiocholanolone + Androsterone

DHEA

Cortisol

Cortisol Metabolism

Circulating Free Cortisol

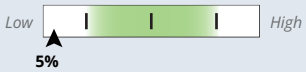


Metabolized Cortisol

Total Cortisol Production (THF + THE)

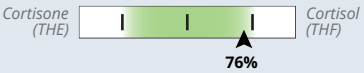
Cortisol Clearance Rate

THF + THE / Cortisol + Cortisone



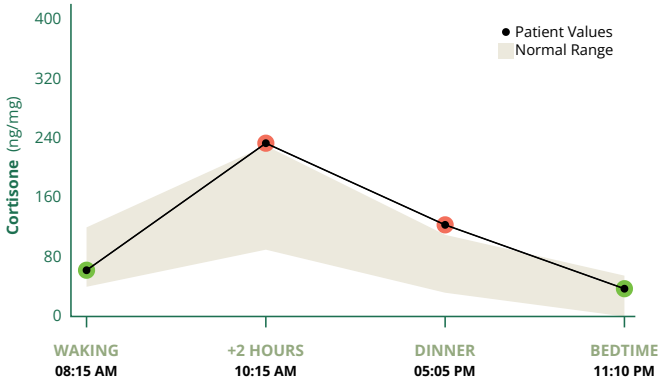
Systemic Preference

Cortisol / Cortisone Metabolites

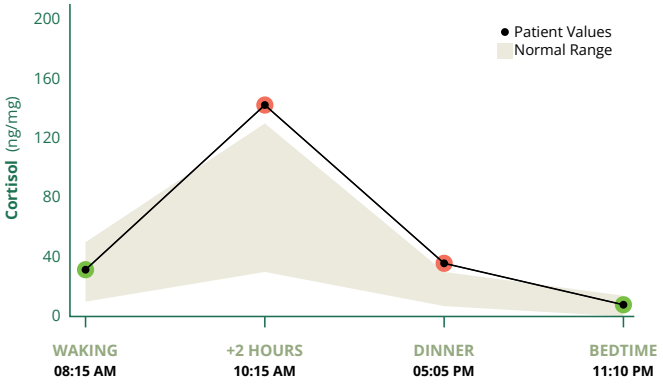


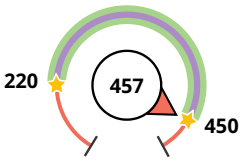
NOTE: This 11b-HSD index measures the balance of cortisol and cortisone metabolites which best reflects the overall balance of active cortisol and inactive cortisone systemically.

Daily Free Cortisone Pattern



Daily Free Cortisol Pattern

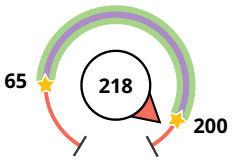




24 Hour Free Cortisone

Sum of all Values

Cortisol and Cortisone interconvert (11b-HSD)



24 Hour Free Cortisol

Sum of all Values

dutchtest® COMPLETE

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Age: 29
Sex: Female
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Collection Times:
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2025-10-18 10:15AM (U2)
2025-10-17 05:05PM (U3)
2025-10-17 11:10PM (U4)

Ordering Provider:

Precision Analytical

Adrenal Hormones & Metabolites

TEST		RESULT	UNITS	NORMAL RANGE
Daily Free Cortisol and Cortisone (Urine)				
Cortisol (U1) - Waking	Within range	31.5	ng/mg	10 - 50
Cortisol (U2) - +2 Hours	Above range	142.4	ng/mg	30 - 130
Cortisol (U3) - Dinner	Above range	35.8	ng/mg	7 - 30
Cortisol (U4) - Bedtime	Within range	7.9	ng/mg	0 - 14
Cortisone (U1) - Waking	Within range	62.3	ng/mg	40 - 120
Cortisone (U2) - +2 Hours	Above range	233.4	ng/mg	90 - 230
Cortisone (U3) - Dinner	Above range	123.4	ng/mg	32 - 110
Cortisone (U4) - Bedtime	Within range	37.4	ng/mg	0 - 55
24 Hour Free Cortisol (Sum of all Values)	Above range	217.6	ng/mg	65 - 200
24 Hour Free Cortisone (Sum of all Values)	Above range	456.5	ng/mg	220 - 450
Creatinine (Urine)				
Creatinine (U1) - Waking	Within range	0.90	mg/ml	0.2 - 2
Creatinine (U2) - +2 Hours	Within range	0.75	mg/ml	0.2 - 2
Creatinine (U3) - Dinner	Within range	1.28	mg/ml	0.2 - 2
Creatinine (U4) - Bedtime	Within range	0.80	mg/ml	0.2 - 2
Cortisol Metabolites and DHEA-S (Urine)				
a-Tetrahydrocortisol (a-THF)	Within range	236.2	ng/mg	75 - 370
b-Tetrahydrocortisol (b-THF)	Low end of range	1125.0	ng/mg	1050 - 2500
b-Tetrahydrocortisone (b-THE)	Below range	1461.4	ng/mg	1550 - 3800
Metabolized Cortisol (THF + THE)	Low end of range	2823.0	ng/mg	2750 - 6500
DHEA-S	Below range	19.2	ng/mg	20 - 750
Cortisol Clearance Rate (CCR)	Below range	4.2		6 - 12.5

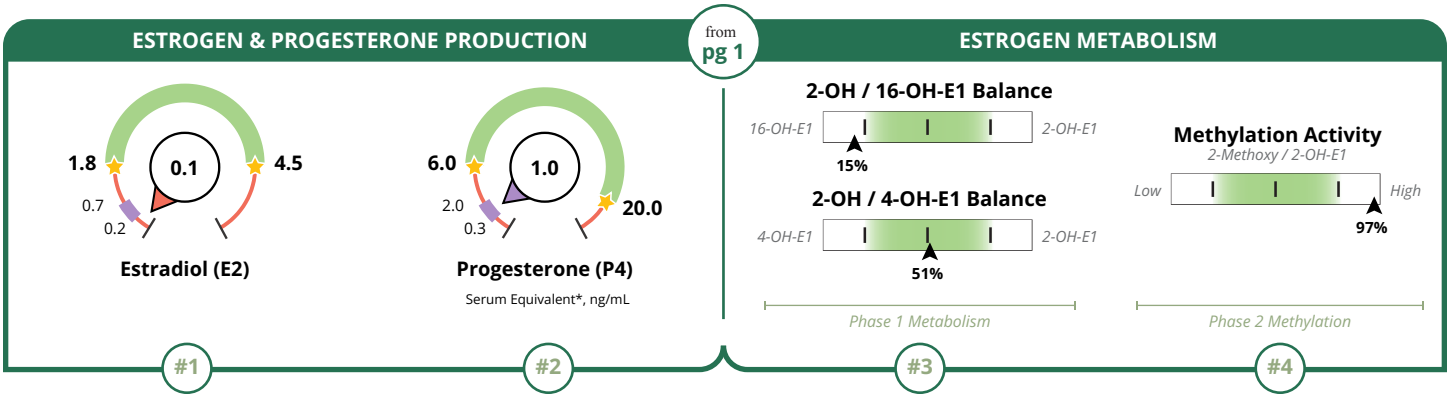
Organic Acid Tests (OATs)

TEST		RESULT	UNITS	NORMAL RANGE
Nutritional Organic Acids (Urine)				
Vitamin B12 Marker - May be deficient if high				
Methylmalonate (MMA)	Within range	1.5	ug/mg	0 - 2.5
Vitamin B6 Markers - May be deficient if high				
Xanthurenate	Within range	0.72	ug/mg	0.12 - 1.2
Kynurenate	Within range	3.2	ug/mg	0.8 - 4.5
Biotin Marker - May be deficient if high				
b-Hydroxyisovalerate	Within range	6.3	ug/mg	0 - 12.5
Glutathione Marker - May be deficient if high				
Pyroglutamate	Below range	24.4	ug/mg	28 - 58
Gut Marker - Potential gut putrefaction or dysbiosis if high				
Indican	Within range	19.9	ug/mg	0 - 100
Neuro-Related Markers (Urine)				
Dopamine Metabolite				
Homovanillate (HVA)	Below range	1.9	ug/mg	3 - 11
Norepinephrine/Epinephrine Metabolite				
Vanilmandelate (VMA)	Below range	2.0	ug/mg	2.2 - 5.5
Neuroinflammation Marker				
Quinolinate	Within range	3.4	ug/mg	0 - 9.6
Additional Markers (Urine)				
Melatonin - Waking				
6-OH-Melatonin-Sulfate	Within range	42.8	ng/mg	10 - 85
Oxidative Stress / DNA Damage				
8-Hydroxy-2-deoxyguanosine (8-OHdG)	Within range	1.5	ng/mg	0 - 5.2

- The pyroglutamate is low. Although the majority of patients have higher levels than this result, the significance of low urinary pyroglutamate has not been established in scientific literature.
- The HVA, a metabolite of dopamine, is below the normal range. This may be seen with low dopamine or with slow methylation. Review dopamine-related symptoms before initiating treatment.
- The VMA, a metabolite of epinephrine/norepinephrine, is below the normal range. This may be seen with low adrenal output. Reviewing cortisol may help determine the root cause.

About Your Results | Estrogen & Progesterone

The following *About Your Results* sections include key DUTCH report elements from page 1 to aid your interpretation.



Estrogen-related Patient or Sample Comments:

- The patient reports no menstrual cycles.

#1. Assess estrogen levels given the patient's reproductive status. More information is available here.

- Estradiol (the most potent estrogen) is **0.12 ng/mg**, which is below the postmenopausal range. If the patient is not taking estrogen lowering medications, consider that over 90% of postmenopausal estrogens come from adrenal androgens. Checking adrenal function may help identify the cause.

#2. Assess progesterone levels given the patient's reproductive status. More information is available here.

- The progesterone serum equivalent is **1.00 ng/mL**, which is within the postmenopausal range.

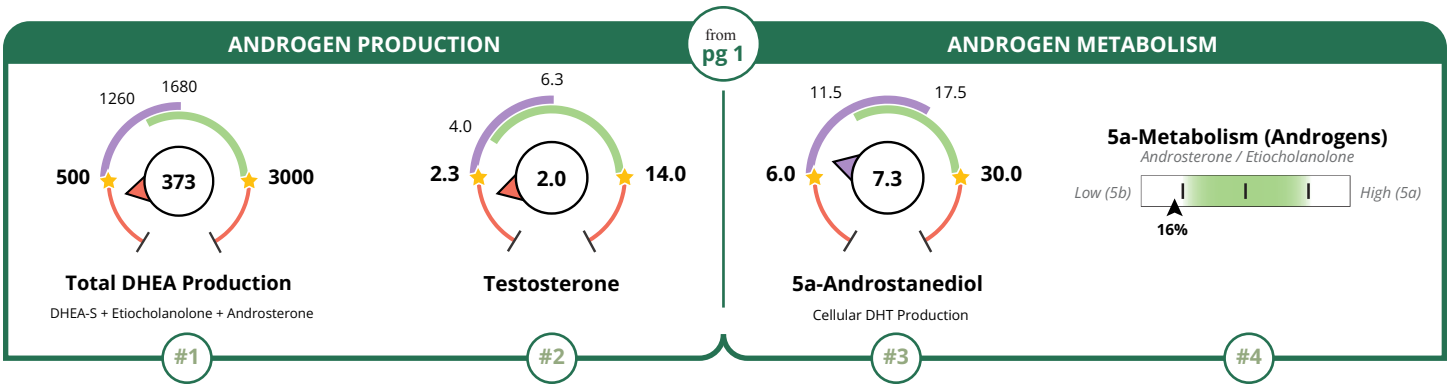
#3. Assess 2-OH preference in phase 1 estrogen metabolism. More information is available here.

- The 2-OH/16-OH-E1 is higher than only **15.0%** of the population, which is below the optimal range. This indicates a preference for the estrogenic 16-OH-E1 metabolite compared to the beneficial 2-OH-E1 metabolite. The 16-OH preference may be associated with estrogenic activity and high estrogen symptoms.

- The 2-OH/4-OH-E1 is higher than **51.0%** of the population, which is within the optimal range. This indicates a balance between the beneficial 2-OH-E1 metabolite and the potentially genotoxic (DNA damaging) 4-OH-E1 metabolite.

#4. Assess methylation of 2-OH catechol estrogens. More information is available here.

- The methylation activity is higher than **97.0%** of the population, which is above the optimal range. This indicates fast estrogen methylation, which is beneficial for efficient estrogen detoxification.



Androgen-related Patient or Sample Comments:

- Women aged 41-55 may fall within or below the optimal premenopausal androgen range. Symptoms and other androgen levels should be considered when assessing whether these levels are appropriate for the patient. This age range includes the typical transition through perimenopause and menopause, which can vary significantly between individuals. Therefore, androgen results in this group should be interpreted with both premenopausal and postmenopausal reference ranges in mind.

#1. Assess adrenal androgen levels (Total DHEA). More information is available here.

- The total DHEA production is **373 ng/mg**, which is below the overall range, meaning it is low for women of any age. These three DHEA metabolites represent about 75% of adrenal androgens, which are typically the source of more than half a woman's circulating testosterone and a significant portion of circulating estrogens.

#2. Assess testosterone levels. More information is available here.

- Testosterone is **1.99 ng/mg**, which is below the overall range, meaning it is low for women of any age. If paired with low 5a-androstanediol, this may contribute to low androgen symptoms. Consider testing serum testosterone to confirm testosterone levels before initiating treatment. In most cases, 25-50% of testosterone comes from the ovaries and the rest from adrenal androgen production (see above). Testosterone is a strong androgen and can become 3x more potent if metabolized to 5a-DHT (see below) within target tissue.

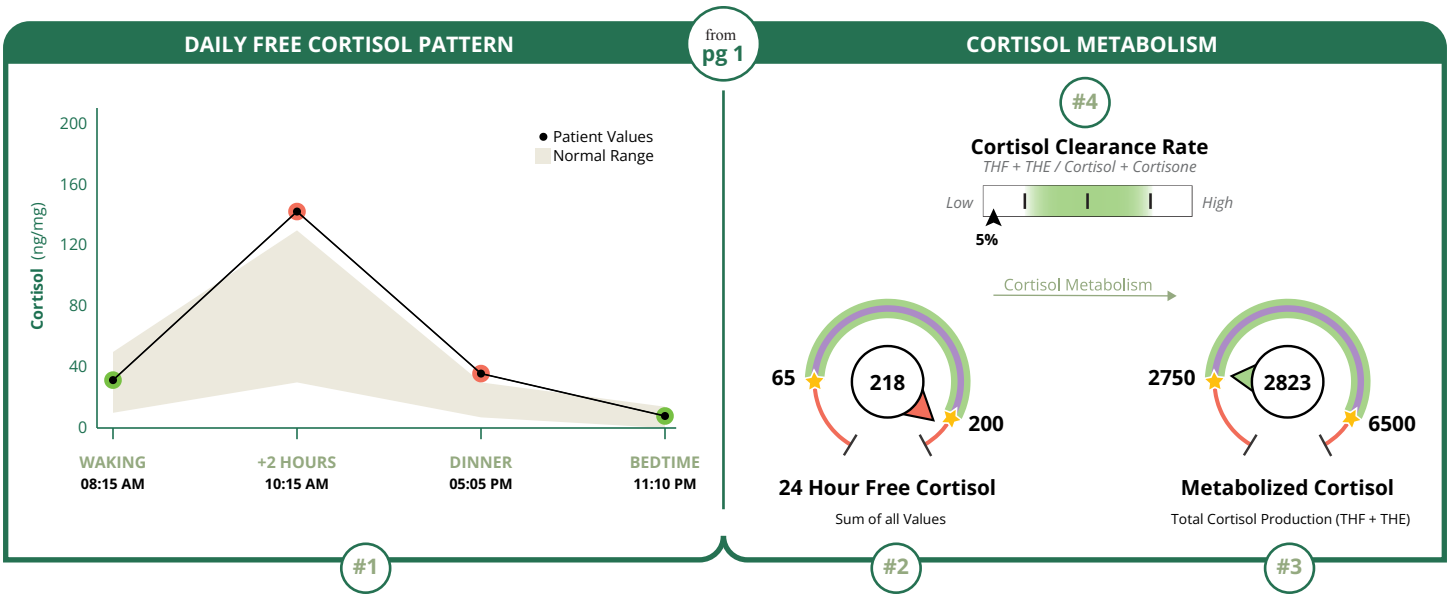
#3. Assess cellular production of 5a-DHT via 5a-androstanediol. More information is available here.

- 5a-Androstanediol is **7.3 ng/mg**, which is below the optimal premenopausal range, but within the postmenopausal range range. 5a-Androstanediol reflects the tissue activity of 5a-DHT (the most potent androgen). If paired with low testosterone, this may contribute to low androgen symptoms.

#4. Assess if there is a preference for the more potent alpha metabolism of the androgens. More information is available here.

- 5a-Metabolism of androgens is higher than only **16.0%** of the population, which is below the range. This indicates a preference for less androgenic pathway. If paired with low androgens, this may contribute to low androgen symptoms.

About Your Results | Cortisol



Cortisol-related Patient or Sample Comments:

#1. Assess the daily free cortisol pattern. More information is available here.

- One or more points on the Daily Free Cortisol Pattern are out of the optimal range. Note the time of day and whether out-of-range results are low or high at each point.

#2. Assess the daily total of free cortisol in circulation (24hr Free Cortisol). More information is available here.

- The 24hr Free Cortisol is **218 ng/mg**, which is above the optimal range. This indicates high free cortisol levels.

#3. Assess the total cortisol produced by the adrenal glands (Metabolized Cortisol). More information is available here.

- The Metabolized Cortisol, which reflects the total cortisol output for the day, is **2,823 ng/mg**, which is within the optimal range, but towards the low end.

#4. Assess the rate of cortisol clearance from the body. More information is available here.

- The Cortisol Clearance Rate is higher than only **5.0%** of the population, which is below the optimal range. This indicates that cortisol and cortisone are being metabolized at a slower rate than expected. If paired with high free cortisol, this can contribute to high cortisol symptoms.

About Your Results | Advanced Insights

The previous "About Your Results" pages look at core insights for the DUTCH report shown on the Hormone Testing Summary page, all of which are worth considering for most patients. Next, "Advanced Insights" cover additional features within the DUTCH test that require reviewing the pages after the summary page. These concepts are more complex but can be highly relevant for some patients. Review the concepts and look for patient-specific comments, when notable, in bullets.

ESTROGEN & PROGESTERONE

#1. Assess whether E1, E3, or Total Estrogen levels add more insight into overall estrogenic activity.

While E2 is the most potent estrogen, other estrogens such as estrone (E1), and sometimes estriol (E3), also contribute to overall estrogenic activity. Additionally, examining Total Estrogens (listed on the Sex Hormones & Metabolites page) can provide insight into overall estrogen production, which may not be fully reflected in the E2 result alone.

E1 is 10% as potent as E2 but is typically more abundant, about 5x higher in premenopausal women and 10x higher in postmenopausal women. This makes it a significant contributor to estrogenic symptoms (high or low), especially in menopause. While all estrogens are potent immune stimulators, E1 may promote more inflammatory cytokine production than other estrogens. Reviewing the relative level of E1 to E2 may give further insight into estrogenic symptoms (high or low) and long-term outcomes, especially in menopause. In cases where E1 is significantly different from E2, a note will be here describing the potential impact.

E3 is a weak estrogen that may have anti-inflammatory properties. In most conditions, E3 is not a significant contributor to estrogenic symptoms. However, when supplemented, checking levels may be helpful. Since the route of administration can influence how the test result is interpreted, notes on E3 supplements (such as creams or pills) will be shown here, if applicable.

The Total Estrogen level should be viewed secondarily to the most potent estrogen levels like E1 and E2, which typically match the patient presentation best. For example, Total Estrogen can be high with robust, healthy estrogen metabolism. Therefore, its levels do not always indicate a cause for high or low estrogen-related symptoms. If out of range, the Total Estrogen level will be noted here.

#2. Assess if there is a preference for alpha metabolism of progesterone. More information is available here.

The slider bar for 5a-metabolism of progesterone metabolites reflects the balance between a-pregnanediol and b-pregnanediol. Most progesterone is typically metabolized to b-pregnanediol, but a-pregnanediol is an active metabolite that can bind to GABA receptors in the central nervous system. A higher result on the 5a-metabolism (P4) slider indicates that available progesterone has a greater potential for impact on GABA receptors.

- 5a-metabolism of progesterone is higher than only **8.0%** of the population, which is below the optimal range. This indicates a preference for 5b compared to 5a metabolites. 5a progesterone metabolites are active on GABA receptors and may impact mood and sleep, but in this case the patient makes less of these metabolites than most. This is most relevant when patients have luteal levels of progesterone or higher, and especially relevant for those on oral/sublingual progesterone.

#3. Assess estrogen clearance through phase 1 and 2. More information is available here.

By looking at the parent estrogens (E1, E2) and their breakdown products (2OH, 4OH, 16OH, and 2MeOHE1), we can see how quickly estrogen is being metabolized. If the parent estrogens are higher than the breakdown products, it means estrogen is clearing more slowly, which increases risk of estrogen excess symptoms. Balanced levels show normal clearance, while lower parent estrogens compared to breakdown products suggest faster clearance, decreasing the risk of estrogen excess symptoms.

- The phase 1 estrogen metabolites are higher compared to the primary estrogens (E1, E2). This indicates the primary estrogens may be metabolized more efficiently through phase 1. In this case, E1 is within or below the menopausal range, so faster overall metabolism may not impact symptoms.

#4. Assess whether any of the estrogen-related organic acids are out of range. More information is available here.

Estrogen levels, metabolites, and metabolism patterns can be influenced by nutrient status, oxidative stress, and gut health. Imbalances in glutathione, B12, B6, gut dybiosis, and oxidative stress markers will be commented on here, if relevant for the patient. This may help identify contributing factors affecting estrogens.

ANDROGENS

#1. Assess if the DHEA-S is relatively lower than the Total DHEA. More information is available here.

DHEA-S is primarily produced in the adrenals through sulfation. Inflammation can inhibit sulfation, lowering DHEA-S levels and diverting DHEA metabolism toward 5a- and 5b-reductase pathways, resulting in higher etiocholanolone (5b-metabolite) and androsterone (5a-metabolite) levels relative to DHEA-S. Review the patient's results to assess if this pattern is present.

#2. Assess the androgen pattern to determine if urine testosterone may not accurately reflect systemic levels (UGT2B17 deletion). More information is available here.

- This advanced topic is only relevant if the patient has low testosterone (T) with other specific patterns of androgen metabolites, especially when levels of Epi-T (see page 3) are much higher than T on the DUTCH Test. In patients that do have a suspicious pattern, urine testosterone may underestimate true testosterone levels. This patient's results do NOT indicate a reason to be suspicious of the urine testosterone levels. For information on this topic, see this video.

#3. While 5a-androstanediol best represents cellular 5a-DHT production, assess if 5a-DHT offers additional insight into androgenic activity More information is available here.

5a-DHT is testosterone's active metabolite and is three times more potent than testosterone. If elevated it may contribute to androgen excess symptoms. Research shows 5a-androstanediol may be a better marker of 5a-DHT tissue activity, but the 5a-DHT result may provide additional insight. Review the 5a-DHT result in context of other androgens and androgenic symptoms for a deeper understanding of the androgen results.

#4. Assess whether any of the androgen-related organic acids are out of range. More information is available here.

Androgen levels can be influenced by inflammation and nutrient status. Imbalances in B6 and neuroinflammation markers will be commented on here, if relevant for this patient's androgens. This may help identify factors contributing to androgen imbalances, if present.

ADRENAL

#1. Assess if cortisone (inactive) adds more insight to the free cortisol assessment. More information is available here.

Cortisol is an active adrenal glucocorticoid, while cortisone is an inactive "storage" form. In the kidney, a significant amount of cortisol is converted to cortisone before excretion into urine. Therefore, urinary cortisone should be considered a reflection or "shadow" of systemic cortisol. The degree to which this happens in an individual may vary. If free cortisone is significantly higher than free cortisol, it may indicate free cortisol levels were higher in circulation (serum) than the urinary free cortisol implies. If free cortisone is lower than free cortisol, this may indicate free cortisol levels were not as high in circulation (serum) as urinary free cortisol implies.

If the cortisone is significantly different from cortisol, there will be a bulleted comment below.

#2. Assess if there is a whole-body preference for (inactive) cortisone or (active) cortisol. More information is available here.

The Systemic Preference slider reflects the balance between cortisol (THF) and cortisone (THE) metabolites and is influenced by systemic cortisol needs. The balance between THF and THE is the best estimation of the systemic balance of cortisol to cortisone. As these metabolites are processed through the liver, the body may shift to cortisol (THF) in response to acute stressors (e.g., immune activation or infection), or toward cortisone (THE) with chronic stress (e.g., long-term inflammation or illness). Review the patient's result to determine if they are out of range.

- The Systemic Preference slider is higher than **76.0%** of the population, which is within the optimal range, but towards the high end. This indicates a mild preference for cortisol metabolites compared to cortisone metabolites. If free cortisol levels are robust, this may contribute to high tissue cortisol. If cortisol levels are low, this may optimize cortisol levels by keeping what is available in its active form.

#3. Assess for anabolic-catabolic balance

Androgens such as DHEA (assessed as Total DHEA Production) support tissue growth and repair, while cortisol promotes tissue breakdown. When DHEA is significantly higher than cortisol, it may suggest an anabolic state (favoring tissue building and repair). When DHEA is significantly lower than cortisol, it may suggest a catabolic state (favoring tissue breakdown).

- The Total DHEA Production is low compared to the Total Cortisol Production. Androgens promote tissue growth and repair, while cortisol promotes tissue breakdown. When androgens are significantly lower than cortisol, as in this case, it may suggest a catabolic (breakdown) state.

#4. Assess whether any of the cortisol-related organic acids are out of range. More information is available here.

Cortisol can be impacted by inflammation, nutrient status, and sleep. Imbalances in B12, B6, melatonin, and neuroinflammation markers will be commented on here if relevant for the patient. This may help identify contributing factors affecting cortisol results.

Thank you for choosing DUTCH for your functional endocrinology testing needs!

Please review our DUTCH resources for information on reading the DUTCH test:
For DUTCH Overviews and Tutorials, click here: https://dutchtest.com/tutorials
To view the steroid pathway chart, click here: https://dutchtest.com/steroid-pathway

Finally, please review the patient's results along with their requisition form. It is designed to capture relevant medications, symptoms, diagnoses, sample collection, and notes that may be helpful in interpreting the results.

Additional Comments

Reference Range Percentiles

Reference ranges are developed by testing thousands of healthy individuals, while excluding results from outliers or those on impactful medications. A percentile approach is applied, as is done with most labs. Classic reference ranges use the 95th percentile as the upper end of range and the 5th percentile as the lower end of range. Our DUTCH ranges uses the percentiles found in the table below. We feel these ranges reflect the more optimal range sought in functional medicine practices. The table below shows the percentiles used for the reference range of each analyte on the DUTCH report:

Female Reference Ranges (Updated 10.15.2025)									
	Low%	High%	Low	High		Low%	High%	Low	High
b-Pregnanediol	20%	90%	600	2000	Cortisol U0 (Mid-Sleep)	0	90%	0	16
a-Pregnanediol	20%	90%	200	740	Cortisol U1 (Waking)	20%	90%	10	50
Estrone (E1)	20%	80%	12	26	Cortisol U2 (+2 Hours)	20%	90%	30	130
Estradiol (E2)	20%	80%	1.8	4.5	Cortisol U3 (Dinner)	20%	90%	7	30
Estriol (E3)	20%	80%	5	18	Cortisol U4 (Bedtime)	0	90%	0	14
2-OH-E1	20%	80%	5.1	13.1	Cortisone U0 (Mid-Sleep)	0	90%	0	59
4-OH-E1	0	80%	0	1.8	Cortisone U1 (Waking)	20%	90%	40	120
16-OH-E1	20%	80%	0.7	2.6	Cortisone U2 (+2 Hours)	20%	90%	90	230
2-Methoxy-E1	20%	80%	2.5	6.5	Cortisone U3 (Dinner)	20%	90%	32	110
2-OH-E2	0	80%	0	3.1	Cortisone U4 (Bedtime)	0	90%	0	55
4-OH-E2	0	80%	0	0.52	Cortisol Clearance Rate (CCR)	20%	80%	6	12.5
2-16-ratio	20%	80%	2.69	11.83	Melatonin (6-OHMS)	20%	90%	10	85
2-4-ratio	20%	80%	5.4	12.62	8-OHdG	0	90%	0	5.2
2Me-2OH-ratio	20%	80%	0.39	0.67	Methylmalonate	0	90%	0	2.5
DHEA-S	20%	90%	20	750	Xanthurenate	0	90%	0.12	1.2
Androsterone	20%	80%	200	1650	Kynurenate	0	90%	0.8	4.5
Etiocholanolone	20%	80%	200	1000	b-Hydroxyisovalerate	0	90%	0	12.5
Testosterone	20%	80%	2.3	14	Pyroglutamate	10%	90%	28	58
5a-DHT	0	80%	0	6.6	Indican	0	90%	0	100
5a-Androstanediol	20%	80%	6	30	Homovanillate	10%	95%	3	11
5b-Androstanediol	20%	80%	12	75	Vanilmandelate	10%	95%	2.2	5.5
Epi-Testosterone	20%	80%	2.3	14	Quinolinate	0	90%	0	9.6
a-THF	20%	90%	75	370	**Calculated Values**				
b-THF	20%	90%	1050	2500	Total DHEA Production	20%	80%	500	3000
b-THE	20%	90%	1550	3800	Total Estrogens	20%	80%	35	70
					Metabolized Cortisol	20%	90%	2750	6500
					24hr Free Cortisol	20%	90%	65	200
					24hr Free Cortisone	20%	90%	220	450

% = population percentile: Example - a high limit of 90% means results higher than 90% of the women tested for the reference range will be designated as "high."