Nordic Laboratories

PATIENT: XXXXXXXXXXXXXXXXXXX
TEST REF: TST-NL-XXXXX
TEST NUMBER: T-NL-XXXXXX
GENDER: XXXXX
AGE: XX
COLLECTED: 2026-XX-XX
PRACTITIONER:
XXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX

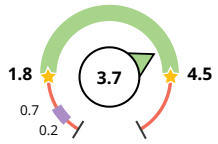
TEST NAME: DUTCH Sex Hormone Metabolites Female

Hormone Testing Summary

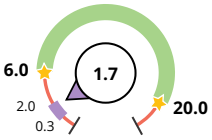
Optimal Luteal Range · Postmenopausal Range · Out of Range · Edge of Range

For an expanded view of results, see pages 2 & 3. For interpretive support, see *About Your Results* pages.

ESTROGEN & PROGESTERONE PRODUCTION



Estradiol (E2)



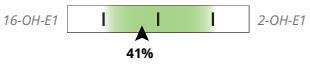
Progesterone (P4)

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

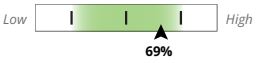


2-OH / 4-OH-E1 Balance

Phase 1 Metabolism

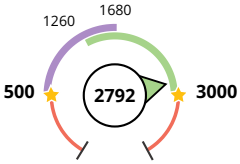
Methylation Activity

2-Methoxy / 2-OH-E1



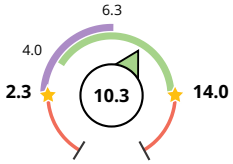
Phase 2 Methylation

ANDROGEN PRODUCTION



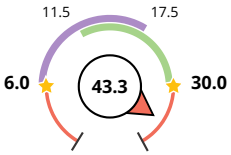
Total DHEA Production

DHEA-S + Etiocholanolone + Androsterone



Testosterone

ANDROGEN METABOLISM

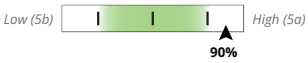


5a-Androstanediol

Cellular DHT Production

5a-Metabolism (Androgens)

Androsterone / Etiocholanolone



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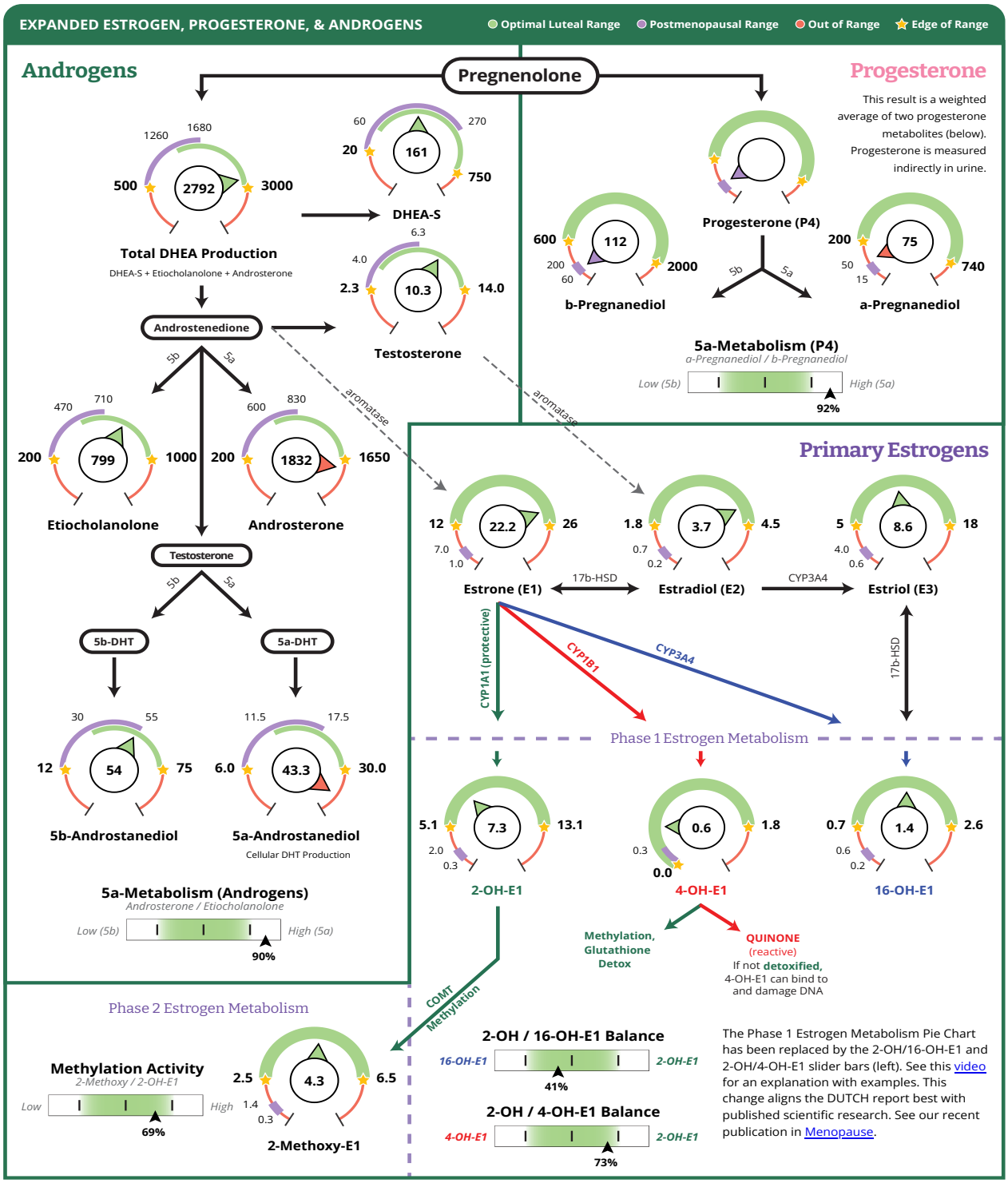
TEST NUMBER: T-NL-XXXXXX
GENDER: XXXXX
AGE: XX
COLLECTED: 2026-XX-XX
PRACTITIONER: XXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX

TEST NAME: DUTCH Sex Hormone Metabolites Female



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TEST REF: TST-NL-XXXXX
TEST NUMBER: T-NL-XXXXXX
GENDER: XXXXX
AGE: XX
COLLECTED: 2026-XX-XX
PRACTITIONER: XXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXX

TEST NAME: DUTCH Sex Hormone Metabolites Female

Sex Hormones & Metabolites

TEST		RESULT	UNITS	LUTEAL*	POSTMENOPAUSAL
Progesterone Metabolites (Urine)					
b-Pregnanediol	Below luteal range	111.6	ng/mg	600 - 2000	60 - 200
a-Pregnanediol	Below luteal range	75.2	ng/mg	200 - 740	15 - 50
Estrogens and Metabolites (Urine)					
Estrone (E1)	Within luteal range	22.17	ng/mg	12 - 26	1.0 - 7.0
Estradiol (E2)	Within luteal range	3.67	ng/mg	1.8 - 4.5	0.2 - 0.7
Estriol (E3)	Within luteal range	8.6	ng/mg	5 - 18	0.6 - 4.0
2-OH-E1	Within luteal range	7.26	ng/mg	5.1 - 13.1	0.3 - 2.0
4-OH-E1	Within luteal range	0.63	ng/mg	0 - 1.8	0 - 0.3
16-OH-E1	Within luteal range	1.42	ng/mg	0.7 - 2.6	0.2 - 0.6
2-Methoxy-E1	Within luteal range	4.33	ng/mg	2.5 - 6.5	0.3 - 1.4
2-OH-E2	Within luteal range	1.24	ng/mg	0 - 3.1	0 - 0.52
4-OH-E2	Within luteal range	0.21	ng/mg	0 - 0.52	0 - 0.12
Total Estrogen	Within range	49.5	ng/mg	35 - 70	3.5 - 15
Metabolite Ratios (Urine)					
2-OH / 16-OH-E1 Balance	Within range	5.11	ratio	2.69 - 11.83	
2-OH / 4-OH-E1 Balance	Within range	11.52	ratio	5.4 - 12.62	
2-Methoxy / 2-OH Balance	Within range	0.60	ratio	0.39 - 0.67	
Androgens and Metabolites (Urine)				**Range**	
DHEA-S	Within range	161.1	ng/mg	20 - 750	
Androsterone	Above range	1831.5	ng/mg	200 - 1650	
Etiocholanolone	Within range	799.0	ng/mg	200 - 1000	
Testosterone	Within range	10.27	ng/mg	2.3 - 14	
5a-DHT	Above range	8.1	ng/mg	0 - 6.6	
5a-Androstanediol	Above range	43.3	ng/mg	6 - 30	
5b-Androstanediol	Within range	53.9	ng/mg	12 - 75	
Epi-Testosterone	Within range	5.8	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

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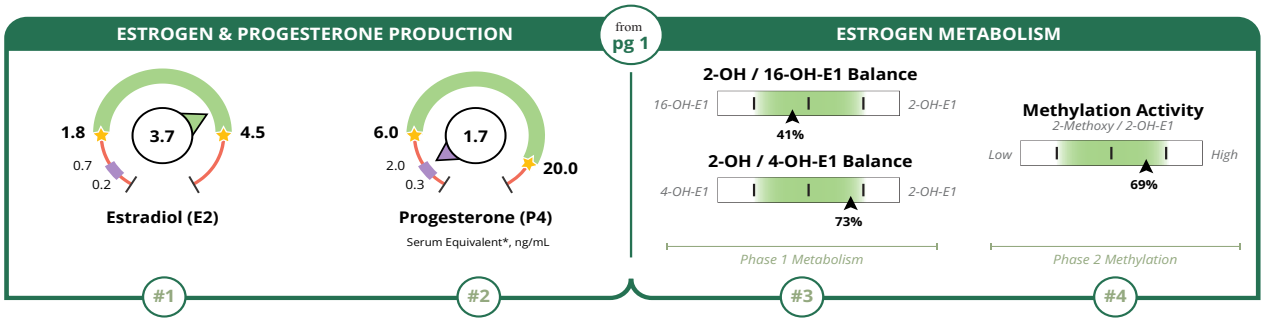
TEST NAME: DUTCH Sex Hormone Metabolites Female

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 reported using a synthetic progestin IUD. The progestin in the IUD may impact hormone levels, depending on the patient. The DUTCH test measures only endogenous or bioidentical hormones, and hormonal IUDs do not affect the accuracy of the results.
- The patient reports no menstrual cycles.
- The patient reports significant symptoms of estrogen deficiency.

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

- Estradiol (the most potent estrogen) is **3.67 ng/mg**, which is within the optimal luteal range.

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

- The progesterone serum equivalent is **1.70 ng/mL**, which is below the optimal luteal 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 **41.0%** of the population, which is within the optimal range. This indicates a balance between the beneficial 2-OH-E1 metabolite and the estrogenic 16-OH-E1 metabolite.
- The 2-OH/4-OH-E1 is higher than **73.0%** of the population, which is in the optimal range, but towards the high end. This indicates a preference for the beneficial 2-OH-E1 metabolite compared to 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 **69.0%** of the population, which is within the optimal range. This indicates optimal estrogen methylation, which is beneficial for efficient estrogen detoxification.

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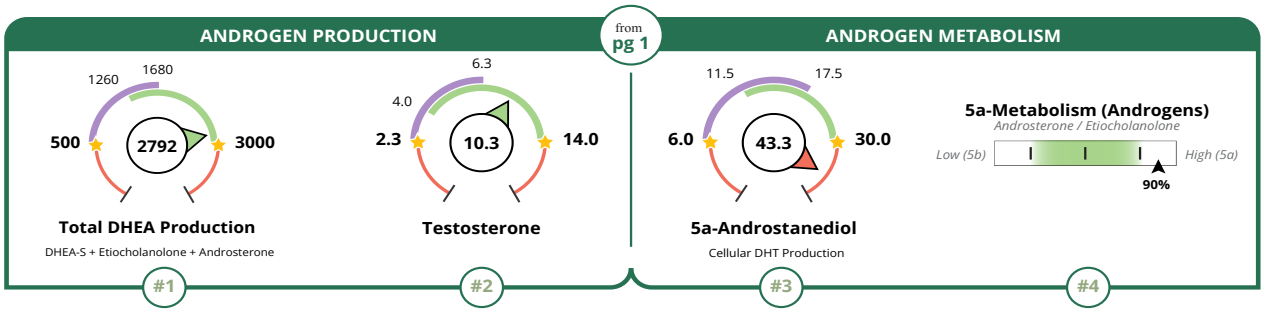
TEST NAME: DUTCH Sex Hormone Metabolites Female

About Your Results | Androgens



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.
- The patient reported significant symptoms of excess androgen levels.

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

- The total DHEA production is **2,792 ng/mg**, which is within the optimal premenopausal range. 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 **10.3 ng/mg**, which is within the optimal premenopausal range. 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 **43.3 ng/mg**, which is above the range for women of any age. 5a-Androstanediol reflects the tissue activity of 5a-DHT (the most potent androgen).

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

- The 5a-Metabolism of androgens is higher than **90.0%** of the population, which is above the range. This indicates a preference for the more androgenic pathway. If paired with high androgens, this may contribute to androgen excess symptoms.

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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 **92.0%** of the population, which is above the normal range. This preference indicates more 5a metabolism compared to 5b progesterone metabolites. 5a progesterone metabolites are active on GABA receptors and may impact mood and sleep. 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 low compared to the primary estrogens (E1, E2). This indicates the primary estrogens may be metabolized more slowly through phase 1, which can be associated with a higher risk of estrogen excess conditions. This is most clinically relevant with high estrogens or estrogen excess symptoms.

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About Your Results | Advanced Insights (continued)

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.

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

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About Your Results | Advanced Insights (continued)

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."

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