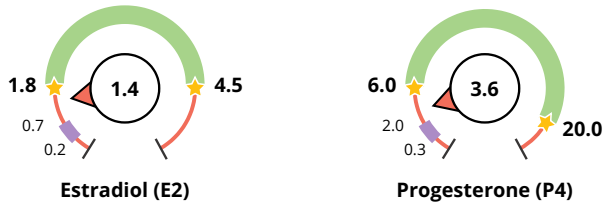


Hormone Testing Summary

● Optimal Luteal Range ● Postmenopausal Range ● Out of Range ★ Edge of Range

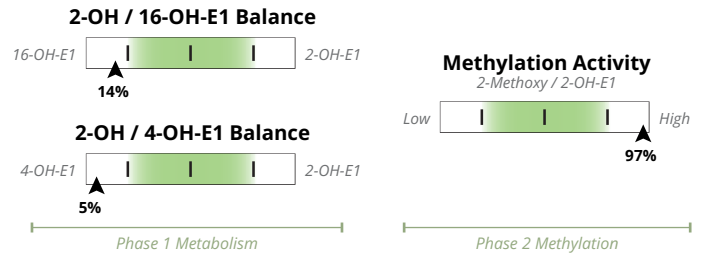
For an expanded view of results, see pages 2 & 3. For interpretive support, see *About Your Results* pages.

ESTROGEN & PROGESTERONE PRODUCTION

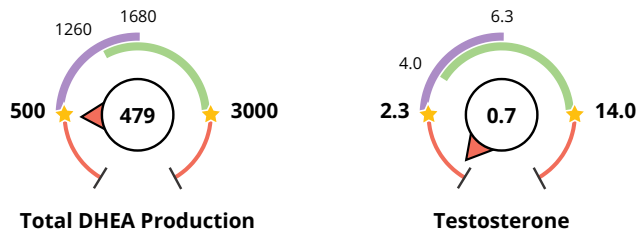


*P4 Serum Equivalent (ng/mL) is a calculated value based on urine pregnanediol.

ESTROGEN METABOLISM

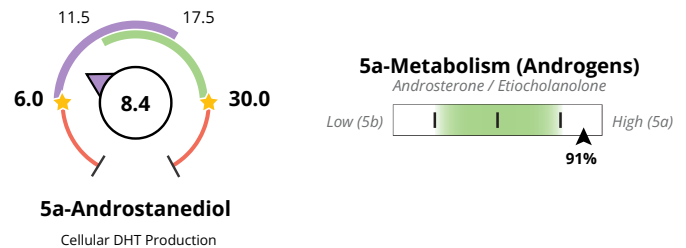


ANDROGEN PRODUCTION

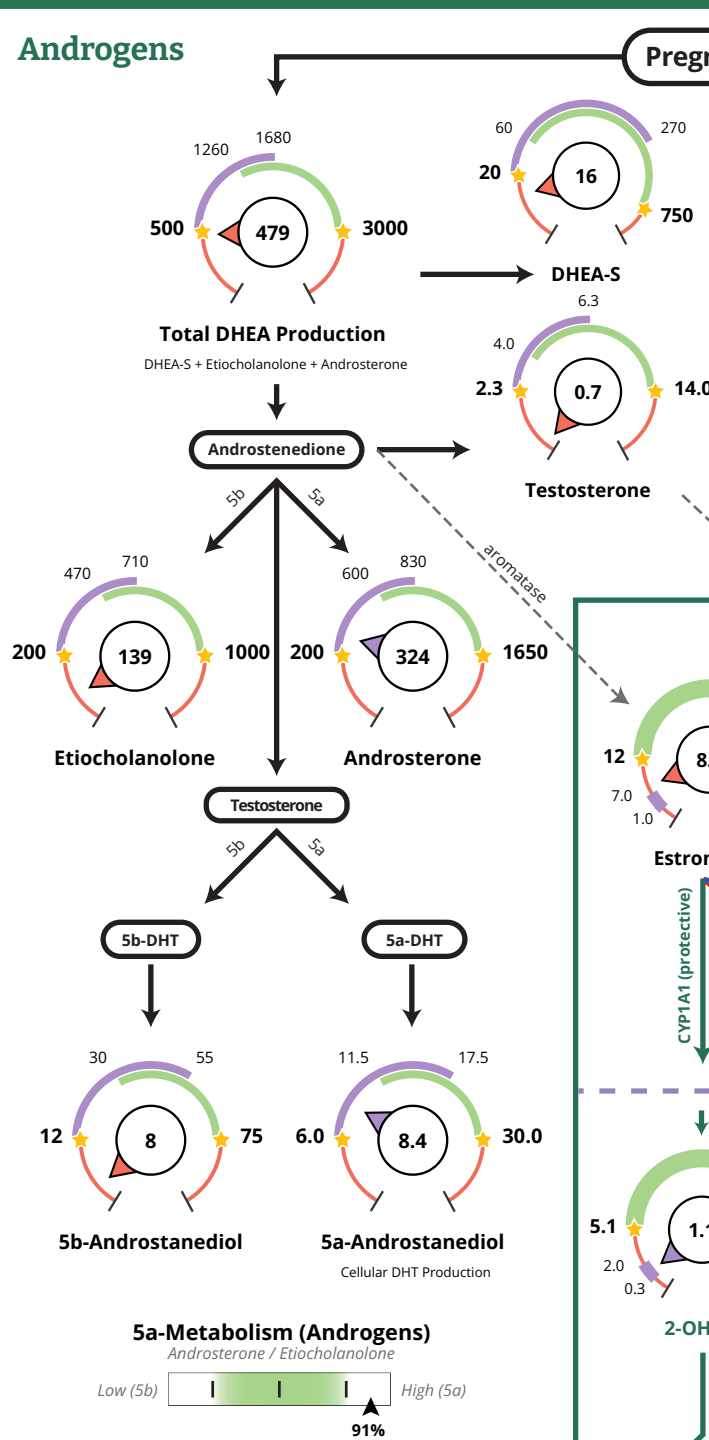


DHEA-S + Etiocholanolone + Androstosterone

ANDROGEN METABOLISM

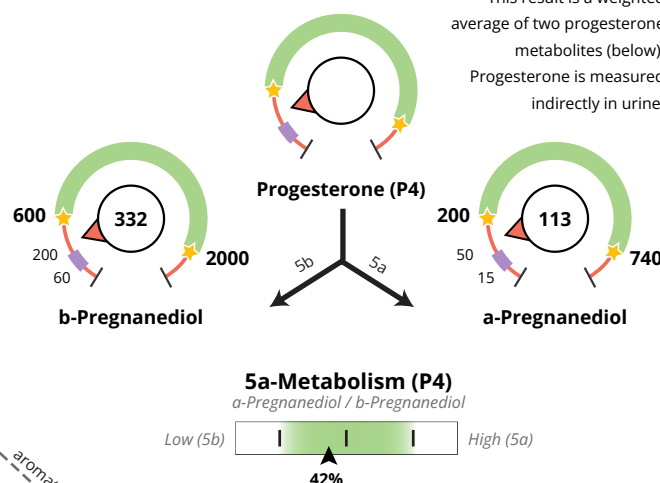


Androgens

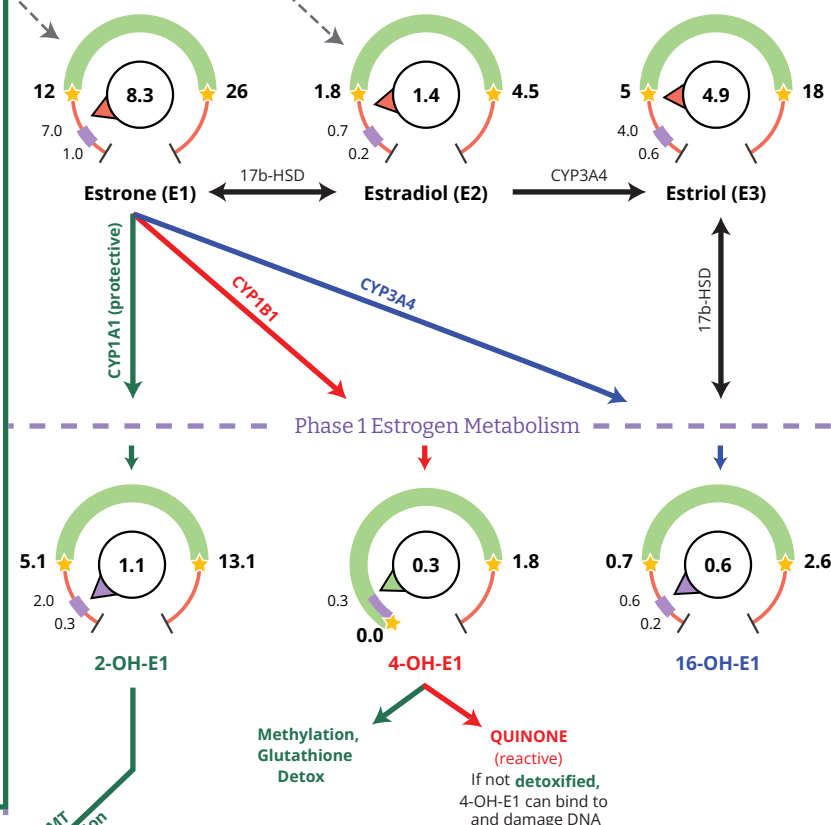


Progesterone

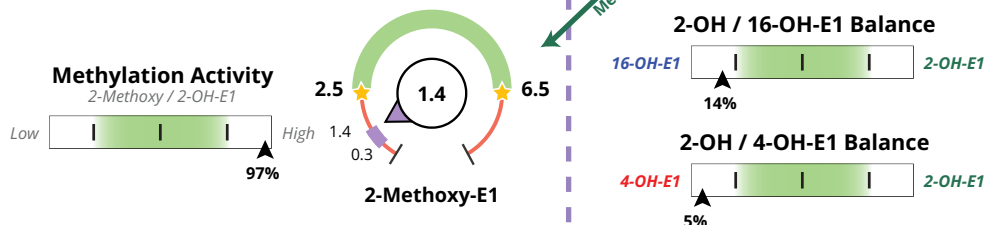
This result is a weighted average of two progesterone metabolites (below). Progesterone is measured indirectly in urine.



Primary Estrogens



Phase 2 Estrogen Metabolism



The three estrogen sliders show your result as a population percentile. The green center marks the normal range; results within or to the right are more favorable. Favoring the 2-OH pathway in Phase 1 and 2-methoxy in Phase 2 may have anti-estrogenic and antioxidant effects. 16-OH is more estrogenic; 4-OH is genotoxic.

Ordering Provider:

Test Provider MD

Sex Hormones & Metabolites

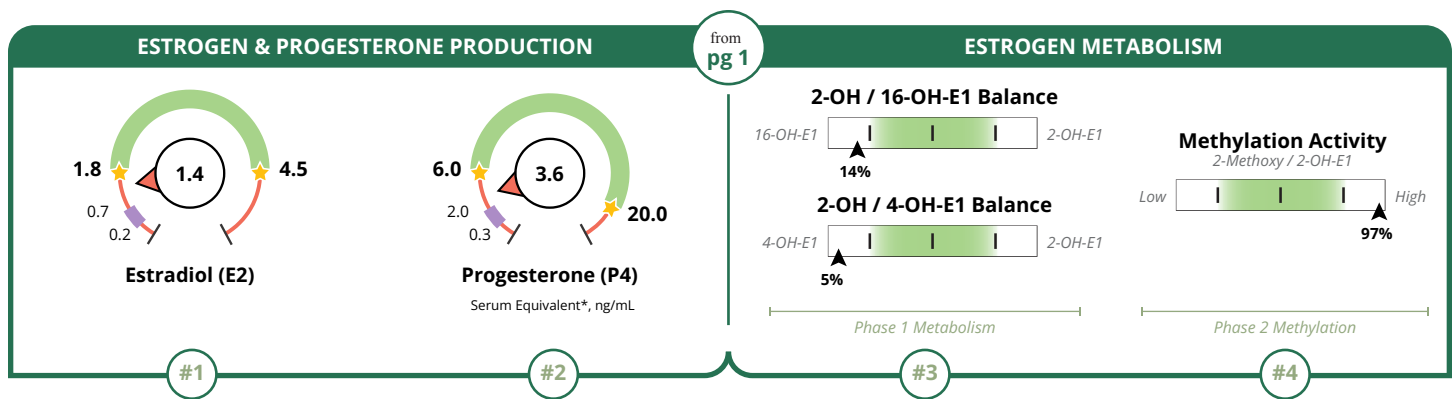
TEST		RESULT	UNITS	LUTEAL*	POSTMENOPAUSAL
Progesterone Metabolites (Urine)					
b-Pregnanediol	Below luteal range	332.4	ng/mg	600 - 2000	60 - 200
a-Pregnanediol	Below luteal range	112.6	ng/mg	200 - 740	15 - 50
Estrogens and Metabolites (Urine)					
Estrone (E1)	Below luteal range	8.27	ng/mg	12 - 26	1.0 - 7.0
Estradiol (E2)	Below luteal range	1.42	ng/mg	1.8 - 4.5	0.2 - 0.7
Estriol (E3)	Below luteal range	4.9	ng/mg	5 - 18	0.6 - 4.0
2-OH-E1	Below luteal range	1.11	ng/mg	5.1 - 13.1	0.3 - 2.0
4-OH-E1	Within luteal range	0.32	ng/mg	0 - 1.8	0 - 0.3
16-OH-E1	Below luteal range	0.63	ng/mg	0.7 - 2.6	0.2 - 0.6
2-Methoxy-E1	Below luteal range	1.38	ng/mg	2.5 - 6.5	0.3 - 1.4
2-OH-E2	Low end of luteal range	0.21	ng/mg	0 - 3.1	0 - 0.52
4-OH-E2	Within luteal range	0.07	ng/mg	0 - 0.52	0 - 0.12
Total Estrogen	Below range	18.3	ng/mg	35 - 70	3.5 - 15
Metabolite Ratios (Urine)					
2-OH / 16-OH-E1 Balance	Below range	1.76	ratio	2.69 - 11.83	
2-OH / 4-OH-E1 Balance	Below range	3.47	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	15.7	ng/mg	20 - 750	
Androsterone	Within range	323.5	ng/mg	200 - 1650	
Etiocholanolone	Below range	139.4	ng/mg	200 - 1000	
Testosterone	Below range	0.67	ng/mg	2.3 - 14	
5a-DHT	Within range	0.7	ng/mg	0 - 6.6	
5a-Androstanediol	Within range	8.4	ng/mg	6 - 30	
5b-Androstanediol	Below range	8.3	ng/mg	12 - 75	
Epi-Testosterone	Within range	3.7	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

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 regular menstrual cycles.
- The patient reported collecting samples on Cycle Day 18. Estrogen and progesterone levels would be expected to reflect luteal phase values if the onset of her next menstrual cycle occurred 4-10 days after sample collection.

#1. Assess estrogen levels given the patient's reproductive status.

- Estradiol (the most potent estrogen) is **1.42 ng/mg**, which is below the optimal luteal range. Confirm that the patient's samples were collected in the luteal phase to interpret this result.

#2. Assess progesterone levels given the patient's reproductive status.

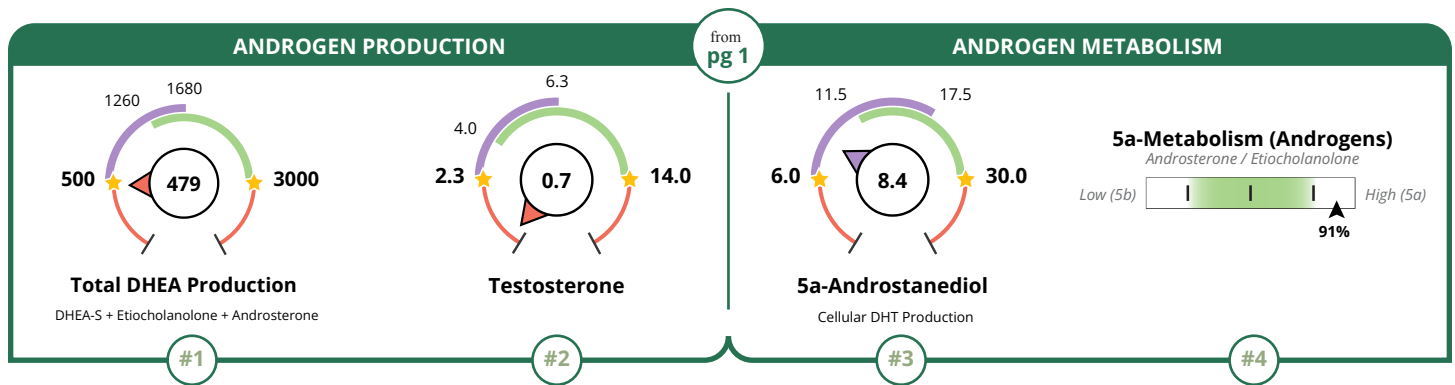
- The progesterone serum equivalent is **3.60 ng/mL**, which is below the optimal luteal range. This may indicate the patient did not ovulate or, if the patient ovulated, progesterone is suboptimal. Confirm that the patient's samples were collected in the luteal phase to interpret this result.

#3. Assess 2-OH preference in phase 1 estrogen metabolism.

- The 2-OH/16-OH-E1 is higher than only **14.0%** 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 only **5.0%** of the population, which is below the optimal range. This indicates a preference for the potentially genotoxic (DNA damaging) 4-OH-E1 metabolite compared to the beneficial 2-OH-E1 metabolite. The 4-OH preference may be associated with oxidative stress.

#4. Assess methylation of 2-OH catechol estrogens.

- 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:

#1. Assess adrenal androgen levels (Total DHEA).

- The total DHEA production is **479 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.

- Testosterone is **0.67 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.
- When testosterone is low and relatively lower than the other androgens on this page, urine testosterone may underestimate serum levels, especially when epi-testosterone levels are higher than testosterone. See advanced insights comments (androgens #2) or this [video](#).

#3. Assess cellular production of 5a-DHT via 5a-androstanediol.

- 5a-Androstanediol is **8.4 ng/mg**, which is below the optimal premenopausal range but within the overall 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.

- The 5a-Metabolism of androgens is higher than **91.0%** 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.

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.

- The Total Estrogen result is 18.3 ng/mg, which is below the optimal range. Review carefully for the timing of the test within the cycle, as this range is set for the luteal phase. Also review for estrogen metabolism and reported low estrogen symptoms. Some estrogens included in this result are more potent and some are weak.

#2. Assess if there is a preference for alpha metabolism of progesterone.

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 **42.0%** of the population, which is in the normal range. This indicates that the patient does not have an extreme metabolic preference for either pathway. 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.

About Your Results | Advanced Insights (continued)

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.

ANDROGENS

#1. Assess if the DHEA-S is relatively lower than the Total DHEA.

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).

- This advanced topic is usually only relevant if the patient has low testosterone on the DUTCH Test and may be relevant in this case. For information on this topic, see this [video](#).
- A specific enzyme called UGT2B17, is primarily responsible for the process (glucuronidation) of how testosterone, but not epi-testosterone is excreted in the urine. When testosterone is low and epi-testosterone is higher, urine might show low testosterone levels when actual testosterone levels in the body are normal, especially if 5a-androstanediol and Total DHEA Production are normal. Some people have a genetic variation affecting this testosterone metabolizing enzyme which impacts how the body gets rid of testosterone, as well as 5a-DHT and 5b-androstanediol in urine.
- If this variant enzyme is present, it does not mean anything is wrong. It just makes urine results less reliable in some people and serum testing (checking free and total testosterone) should be considered prior to initiating treatment for low testosterone. Epi-testosterone, 5a-androstanediol, and the metabolites assessed for Total DHEA Production are processed (glucuronidated) by different enzymes, making them helpful in this analysis.

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

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 (on the Sex Hormone and Metabolites Table page) alongside other androgens and androgenic symptoms for a more complete interpretation.

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>

About Your Results | Advanced Insights (continued)

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 9.24.2026)									
	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%	20	95
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%	68	190
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	13.5
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
Etiolcholanolone	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%	275	1160	Calculated Values				
b-THF	20%	90%	750	1800	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."									

Ordering Provider:

Test Provider MD

Male Sample Report

OR

DOB: 1987-11-06

Age: 37

Sex: Male

Collection Dates:

2025-06-12 (U3 U4)

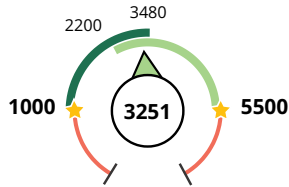
2025-06-13 (U1 U2)

Hormone Testing Summary

● Normal, Age 18 - 40 (Androgens) ● Age 41 - 60+ (Androgens) ● Out of Range ★ Edge of Range

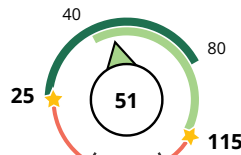
For an expanded view of results, see pages 2 & 3. For interpretive support, see *About Your Results* pages.

ANDROGEN PRODUCTION



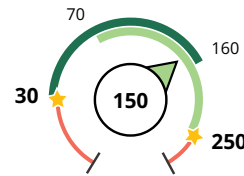
Total DHEA Production

DHEA-S + Etiocholanolone + Androsterone



Testosterone

ANDROGEN METABOLISM



5a-Androstenediol

Cellular DHT Production

5a-Metabolism (Androgens)

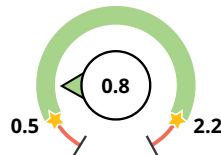
Androsterone / Etiocholanolone



ESTROGEN PRODUCTION



Estrone (E1)



Estradiol (E2)

ESTROGEN METABOLISM

2-OH / 16-OH-E1 Balance



2-OH / 4-OH-E1 Balance



Methylation Activity

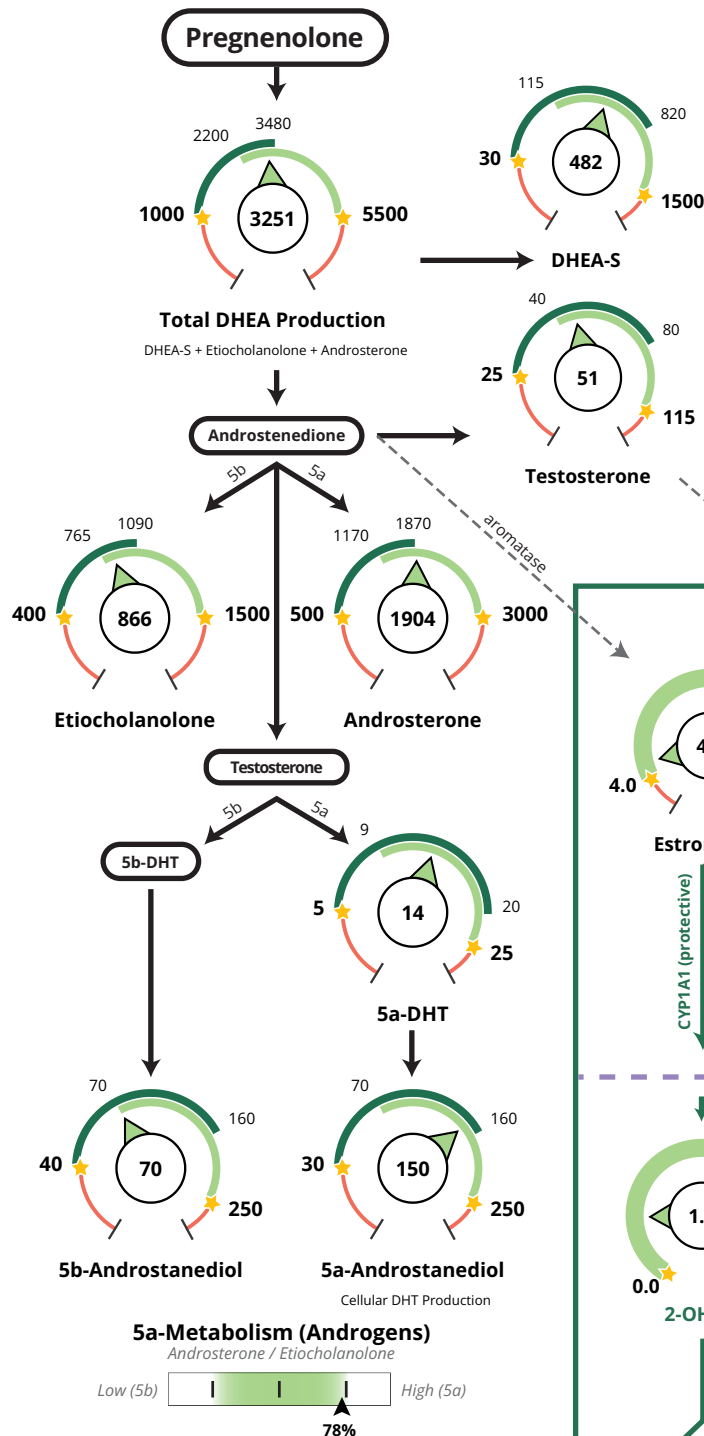
2-Methoxy / 2-OH-E1



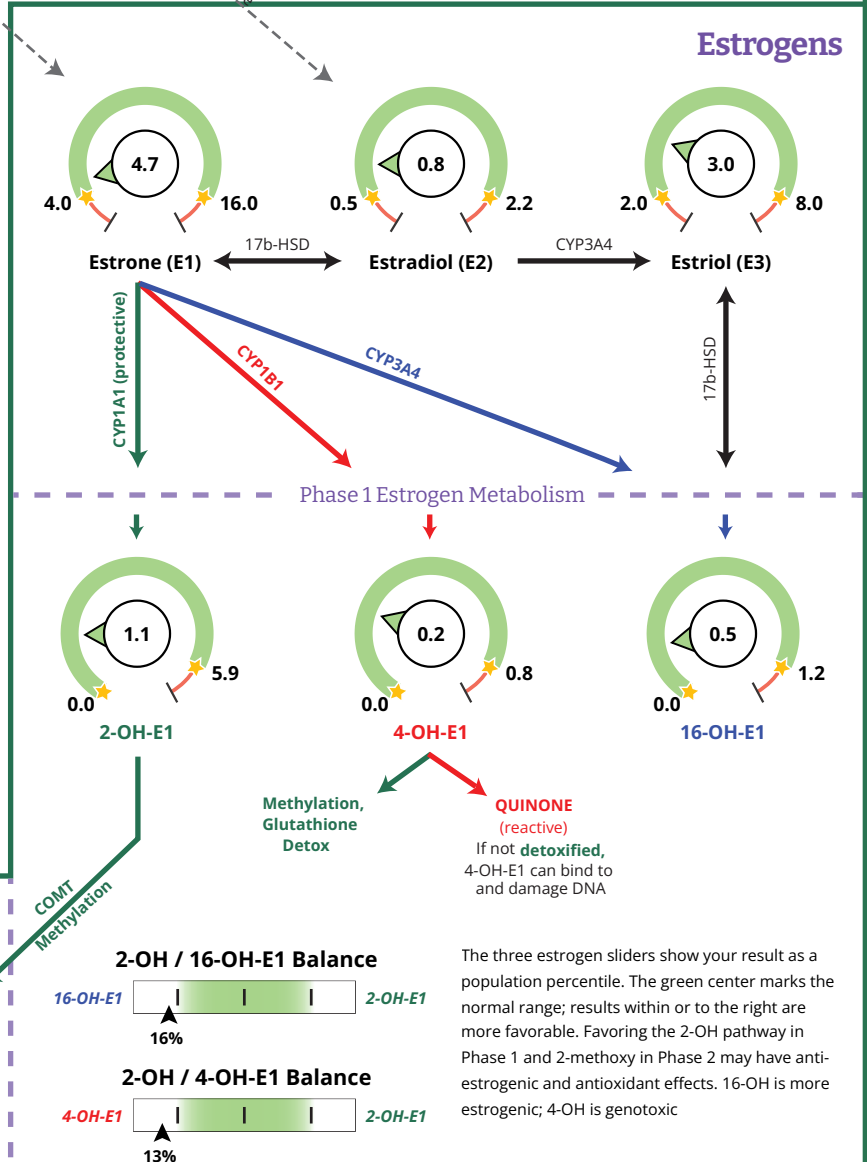
Phase 1 Metabolism

Phase 2 Methylation

Androgens



Estrogens



The three estrogen sliders show your result as a population percentile. The green center marks the normal range; results within or to the right are more favorable. Favoring the 2-OH pathway in Phase 1 and 2-methoxy in Phase 2 may have anti-estrogenic and antioxidant effects. 16-OH is more estrogenic; 4-OH is genotoxic

Ordering Provider:

Test Provider MD

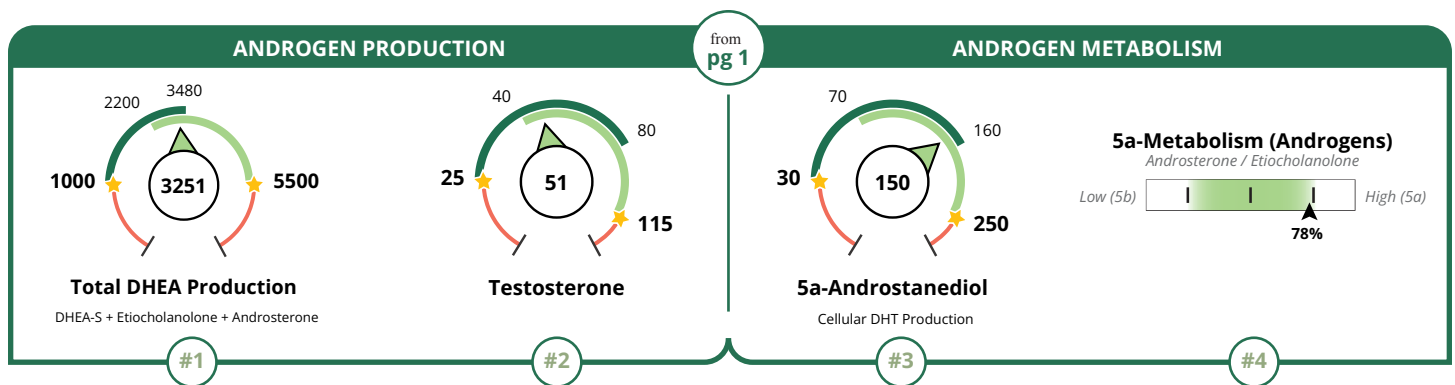
Sex Hormones & Metabolites

TEST		RESULT	UNITS	NORMAL RANGE
Progesterone Metabolites (Urine)				
b-Pregnanediol	Within range	180.7	ng/mg	75 - 400
a-Pregnanediol	Within range	92.0	ng/mg	20 - 130
Estrogens and Metabolites (Urine)				
Estrone (E1)	Low end of range	4.68	ng/mg	4 - 16
Estradiol (E2)	Within range	0.76	ng/mg	0.5 - 2.2
Estriol (E3)	Within range	3.0	ng/mg	2 - 8
2-OH-E1	Within range	1.08	ng/mg	0 - 5.9
4-OH-E1	Within range	0.19	ng/mg	0 - 0.8
16-OH-E1	Within range	0.46	ng/mg	0 - 1.2
2-Methoxy-E1	Within range	1.18	ng/mg	0 - 2.8
2-OH-E2	Within range	0.09	ng/mg	0 - 1.2
4-OH-E2	Within range	0.06	ng/mg	0 - 0.25
Total Estrogen	Low end of range	11.5	ng/mg	10 - 34
Metabolite Ratios (Urine)				
2-OH / 16-OH-E1 Balance	Below range	2.35	ratio	2.85 - 9.88
2-OH / 4-OH-E1 Balance	Below range	5.68	ratio	6.44 - 12.6
2-Methoxy / 2-OH Balance	Above range	1.09	ratio	0.4 - 0.7
Androgens and Metabolites (Urine)				
DHEA-S	Within range	482.0	ng/mg	30 - 1500
Androsterone	Within range	1903.6	ng/mg	500 - 3000
Etiocholanolone	Within range	865.7	ng/mg	400 - 1500
Testosterone	Within range	51.14	ng/mg	25 - 115
5a-DHT	Within range	13.7	ng/mg	5 - 25
5a-Androstenediol	Within range	150.0	ng/mg	30 - 250
5b-Androstenediol	Within range	70.3	ng/mg	40 - 250
Epi-Testosterone	Within range	36.3	ng/mg	25 - 115

"Normal range" shown above refers to the overall range across all ranges, which lands between the stars on the dials. Age-dependent ranges are now included on the DUTCH dials on page 2.

About Your Results | Androgens

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



Androgen-related Patient or Sample Comments:

#1. Assess adrenal androgen levels (Total DHEA).

- The total DHEA production is **3,251 ng/mg**, which is within the optimal range for men 18-40, but towards the lower end.

#2. Assess testosterone levels.

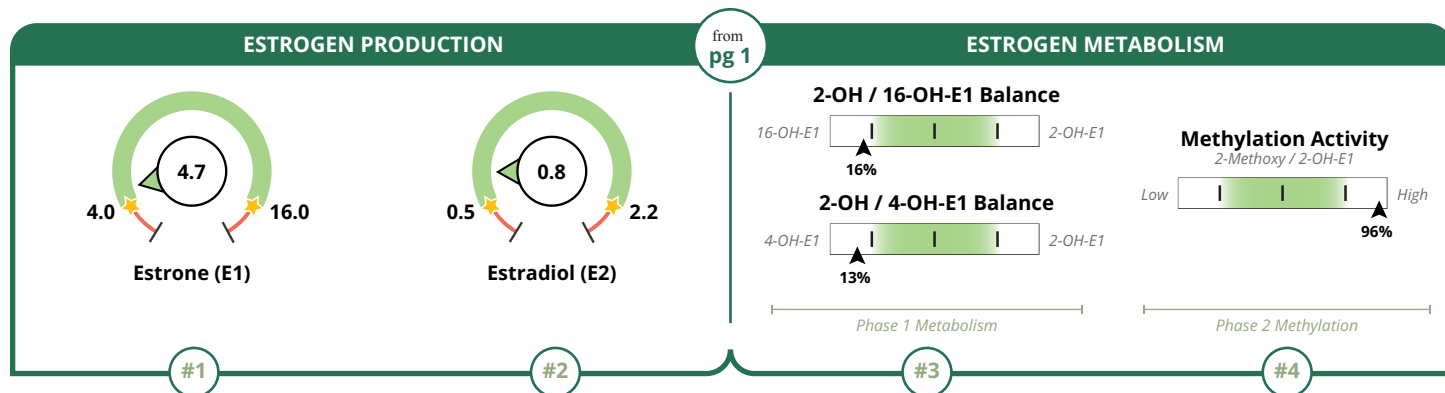
- Testosterone is **51.1 ng/mg**, which is within the optimal range for men 18-40 years old, but in the lower half.

#3. Assess cellular production of 5a-DHT via 5a-androstanediol.

- 5a-Androstanediol is **150 ng/mg**, which is within the optimal range for men 18-40 years old and overlaps with the range for men aged 41 and over. 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.

- 5a-Metabolism of androgens is higher than **78.0%** of the population, which is within the range, but towards the high end. This indicates a mild preference for the more androgenic pathway. If paired with high androgens, this may contribute to androgen excess symptoms.



Estrogen-related Patient or Sample Comments:

#1. Assess estrogen levels.

- The estrone (E1) is **4.68 ng/mg**, which is within the optimal range. E1 is the most abundant estrogen but is significantly less potent than estradiol (E2).
- Estradiol (E2) is **0.76 ng/mg**, which is within the optimal range. E2 is the most potent estrogen and its levels are often related to symptoms.

#2. Assess the conversion of testosterone to estradiol (via aromatase).

- In males, E2 levels come from conversion of circulating testosterone via the aromatase enzyme. Reviewing the E2 level can give insight into circulating testosterone and aromatase activity. The strongest influence on aromatase activity is body fat percentage.

#3. Assess 2-OH preference in phase 1 estrogen metabolism.

- The 2-OH/16-OH-E1 is higher than only **16.0%** 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 only **13.0%** of the population, which is below the optimal range. This indicates a preference for the potentially genotoxic (DNA damaging) 4-OH-E1 metabolite compared to the beneficial 2-OH-E1 metabolite. The 4-OH preference may be associated with oxidative stress.

#4. Assess methylation of 2-OH catechol estrogens.

- The methylation activity is higher than **96.0%** of the population, which is above the optimal range. This indicates fast estrogen methylation, which is beneficial for efficient estrogen detoxification.

ANDROGENS

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.

#1. Assess if the DHEA-S is relatively lower than the Total DHEA.

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).

- 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

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.

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), 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. This makes it a significant contributor to estrogenic symptoms (high or low). While all estrogens are potent immune stimulators, E1 may promote more inflammatory cytokine production than other estrogens. 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. For those using E3 therapy, 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.

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 progesterone production.

In males, progesterone metabolites measured in urine are primarily of adrenal origin. B-pregnanediol is the best marker of total progesterone. High b-pregnanediol may be associated with increased stress or inflammation. Low b-pregnanediol may accompany reduced adrenal cortisol output, although the clinical significance of low progesterone in men is not well understood.

#3. Assess estrogen clearance through phase 1 and 2.

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 levels are balanced with the primary estrogens (E1, E2). This indicates normal phase 1 estrogen clearance.

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).

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:

Male Reference Ranges (Updated 9.24.2026)									
	Low%	High%	Low	High		Low%	High%	Low	High
b-Pregnanediol	10%	90%	75	400	Cortisol U0 (Mid-Sleep)	0	90%	0	23
a-Pregnanediol	10%	90%	20	130	Cortisol U1 (Waking)	20%	90%	25	130
Estrone (E1)	10%	90%	4	16	Cortisol U2 (+2 Hours)	20%	90%	35	180
Estradiol (E2)	10%	90%	0.5	2.2	Cortisol U3 (Dinner)	20%	90%	10	45
Estriol (E3)	10%	90%	2	8	Cortisol U4 (Bedtime)	0	90%	0	20
2-OH-E1	0	90%	0	5.9	Cortisone U0 (Mid-Sleep)	0	90%	0	70
4-OH-E1	0	90%	0	0.8	Cortisone U1 (Waking)	20%	90%	75	215
16-OH-E1	0	90%	0	1.2	Cortisone U2 (+2 Hours)	20%	90%	80	240
2-Methoxy-E1	0	90%	0	2.8	Cortisone U3 (Dinner)	20%	90%	40	130
2-OH-E2	0	90%	0	1.2	Cortisone U4 (Bedtime)	0	90%	0	70
4-OH-E2	0	90%	0	0.25	Cortisol Clearance Rate (CCR)	20%	80%	8.5	18.5
2-16-ratio	20%	80%	2.85	9.88	Melatonin (6-OHMS)	20%	90%	10	85
2-4-ratio	20%	80%	6.44	12.6	8-OHdG	0	90%	0	8.8
2Me-2OH-ratio	20%	80%	0.4	0.7	Methylmalonate	0	90%	0	3.5
DHEA-S	20%	90%	30	1500	Xanthurenate	0	90%	0.2	1.9
Androsterone	20%	80%	500	3000	Kynurenate	0	90%	1	6.6
Etiocholanolone	20%	80%	400	1500	b-Hydroxyisovalerate	0	90%	0	18
Testosterone	20%	90%	25	115	Pyroglutamate	10%	90%	38	83
5a-DHT	20%	90%	5	25	Indican	0	90%	0	131
5a-Androstenediol	20%	90%	30	250	Homovanillate	10%	95%	4	16
5b-Androstenediol	20%	90%	40	250	Vanilmandelate	10%	95%	2.5	7.5
Epi-Testosterone	20%	90%	25	115	Quinolinate	0	90%	0	12.5
a-THF	20%	90%	590	2380	Calculated Values				
b-THF	20%	90%	1340	3070	Total DHEA Production	20%	80%	1000	5500
b-THE	20%	90%	2350	5800	Total Estrogens	10%	90%	10	34
					Metabolized Cortisol	20%	90%	4610	10800
					24hr Free Cortisol	20%	90%	75	300
					24hr Free Cortisone	20%	90%	220	550
% = population percentile: Example - a high limit of 90% means results higher than 90% of the men tested for the reference range will be designated as "high."									