dutchplus®

Accession # 01035995

Male Sample Report
123 A Street
Sometown, CA 90266

DOB: 1976-01-01
Age: 46
Sex: Male

Collection Times:

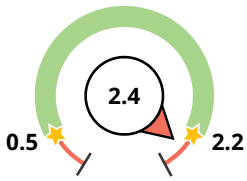
2022-06-13 04:00AM (S)
2022-06-13 04:30AM (S)
2022-06-13 05:00AM (S)
2022-06-13 03:00PM (S)
2022-06-13 08:00PM (S)

2022-06-13 04:00AM (U)
2022-06-13 06:00AM (U)
2022-06-13 03:00PM (U)
2022-06-13 08:00PM (U)

Ordering Provider:
Precision Analytical

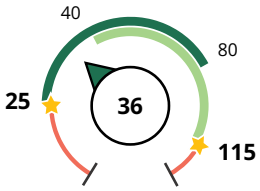
Hormone Testing Summary

ESTROGEN

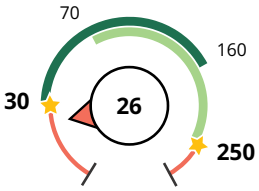


Estradiol (E2)

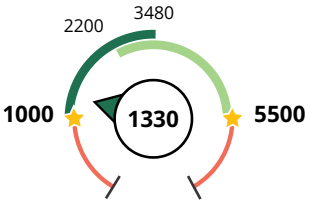
ANDROGENS



Testosterone



5a-Androstanediol

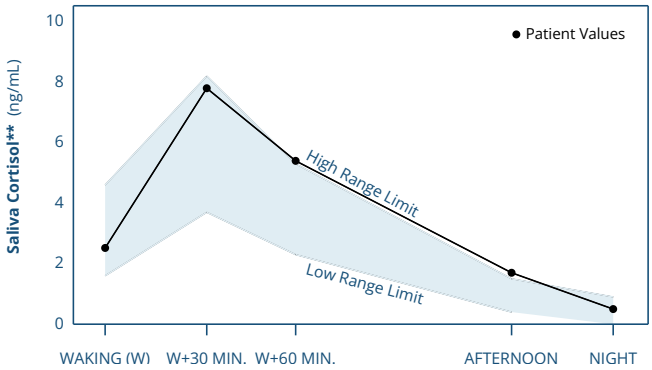


Total DHEA Production

DHEA-S + Etiocholanolone + Androsterone

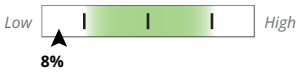
CORTISOL

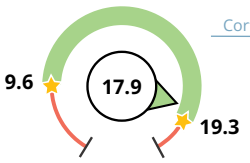
Saliva Free Cortisol Pattern



Cortisol Clearance Rate

THF + THE / Cortisol + Cortisone





Saliva Cortisol Total

Sum of 5 values

Cortisol Metabolism

Metabolized Cortisol

Total Cortisol Production (THF + THE)

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

**Free cortisol best reflects tissue levels. Metabolized cortisol best reflects total cortisol production.

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2022-06-13 08:00PM (U)

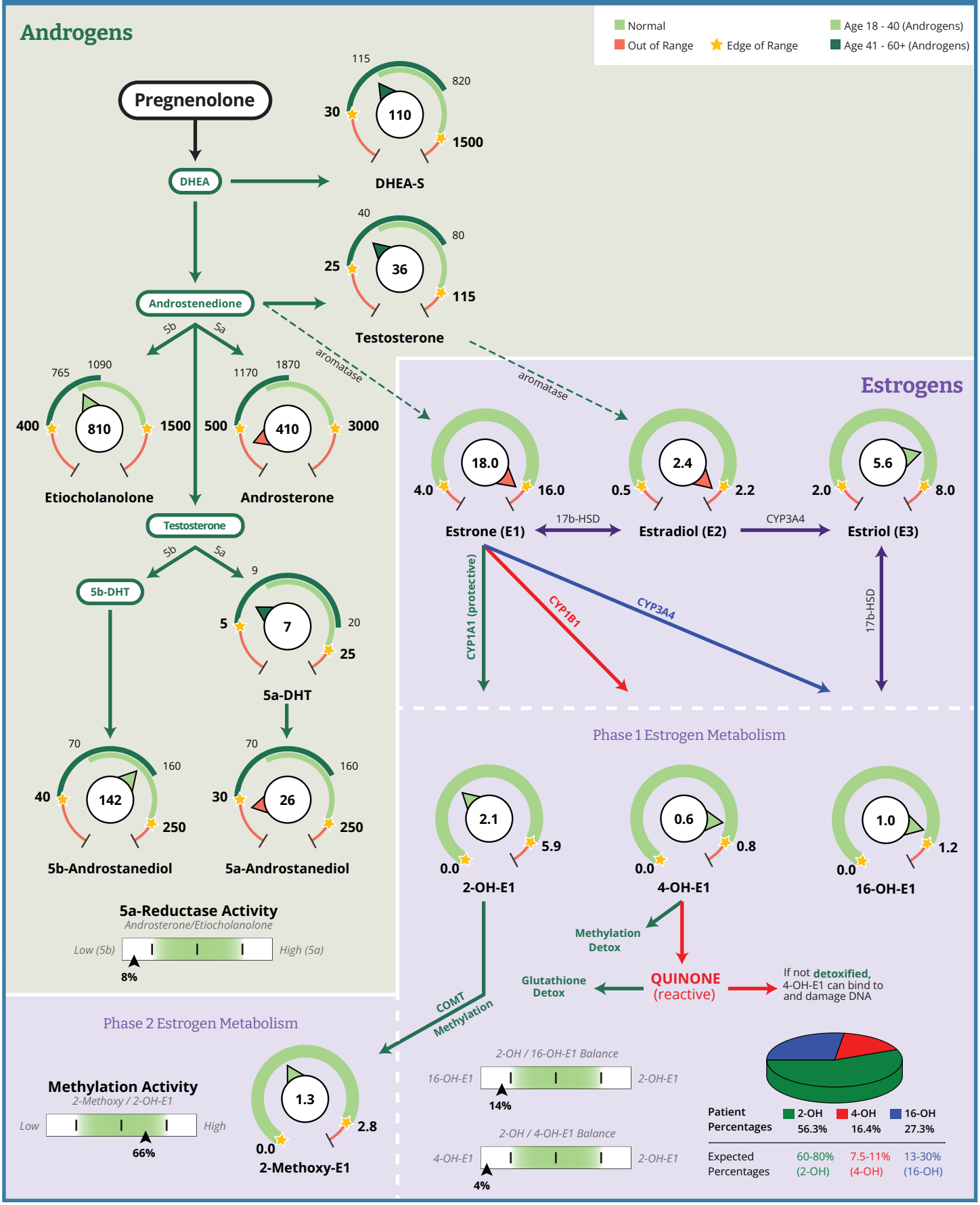
Ordering Provider:
Precision Analytical

Sex Hormones & Metabolites

TEST		RESULT	UNITS	NORMAL RANGE
Progesterone Metabolites (Urine)				
b-Pregnanediol	Within range	175.7	ng/mg	75 - 400
a-Pregnanediol	Low end of range	24.0	ng/mg	20 - 130
Estrogens and Metabolites (Urine)				
Estrone (E1)	Above range	17.96	ng/mg	4 - 16
Estradiol (E2)	Above range	2.42	ng/mg	0.5 - 2.2
Estriol (E3)	Within range	5.6	ng/mg	2 - 8
2-OH-E1	Within range	2.08	ng/mg	0 - 5.9
4-OH-E1	Within range	0.60	ng/mg	0 - 0.8
16-OH-E1	Within range	1.00	ng/mg	0 - 1.2
2-Methoxy-E1	Within range	1.25	ng/mg	0 - 2.8
2-OH-E2	Within range	0.31	ng/mg	0 - 1.2
4-OH-E2	Within range	0.21	ng/mg	0 - 0.25
Total Estrogen	Within range	31.4	ng/mg	10 - 34
Metabolite Ratios (Urine)				
2-OH / 16-OH-E1 Balance	Below range	2.06	ratio	2.85 - 9.88
2-OH / 4-OH-E1 Balance	Below range	3.43	ratio	6.44 - 12.6
2-Methoxy / 2-OH Balance	Within range	0.61	ratio	0.4 - 0.7
Androgens and Metabolites (Urine)				
DHEA-S	Low end of range	110.0	ng/mg	30 - 1500
Androsterone	Below range	410.0	ng/mg	500 - 3000
Etiocholanolone	Within range	809.7	ng/mg	400 - 1500
Testosterone	Low end of range	36.03	ng/mg	25 - 115
5a-DHT	Low end of range	7.0	ng/mg	5 - 25
5a-Androstanediol	Below range	26.0	ng/mg	30 - 250
5b-Androstanediol	Within range	142.0	ng/mg	40 - 250
Epi-Testosterone	Low end of range	41.2	ng/mg	25 - 115

“Normal” range shown above is the overall normal range across all ages (shown as between the stars on the dials). Age-dependent reference ranges are now included with the DUTCH dials on the next page.

SEX HORMONES & METABOLITES



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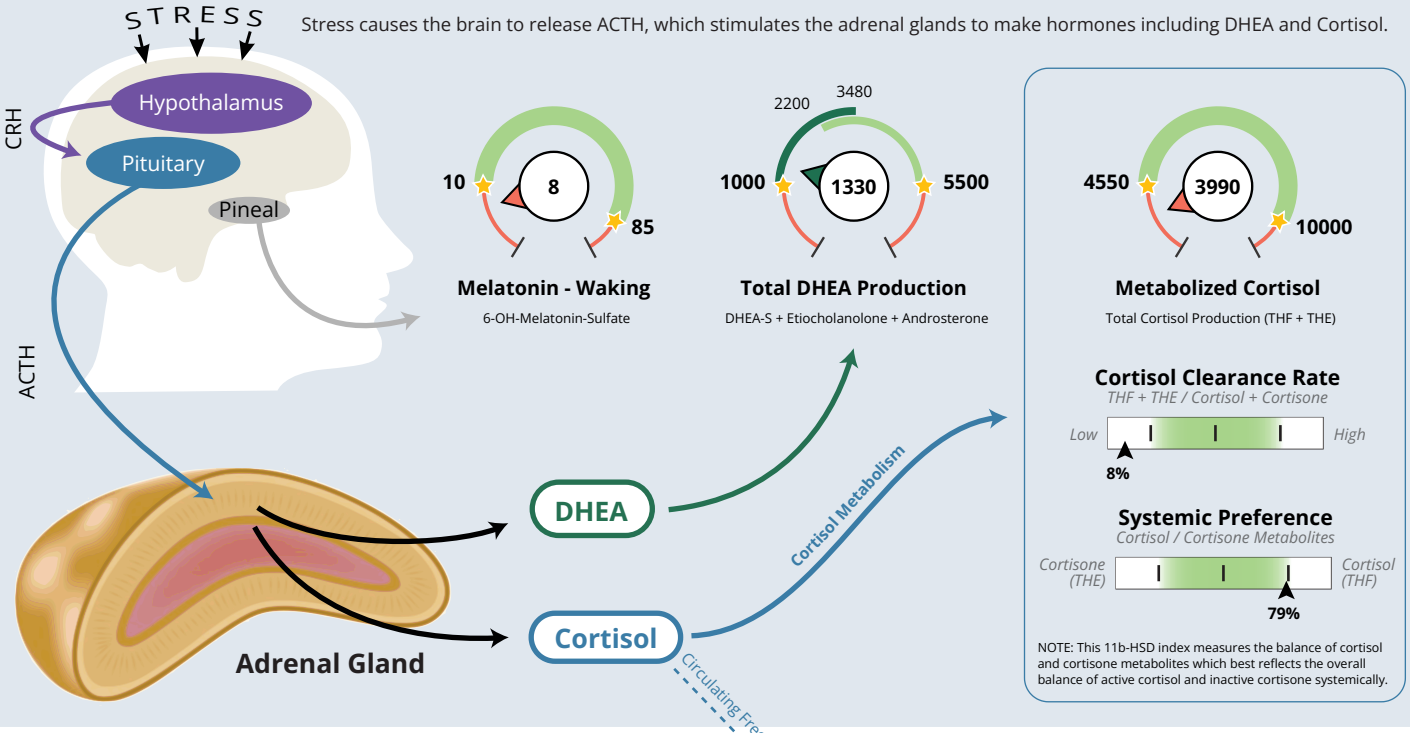
2022-06-14 01:12AM (S*)
2022-06-13 04:00AM (U)
2022-06-13 06:00AM (U)
2022-06-13 03:00PM (U)
2022-06-13 08:00PM (U)

Ordering Provider:
Precision Analytical

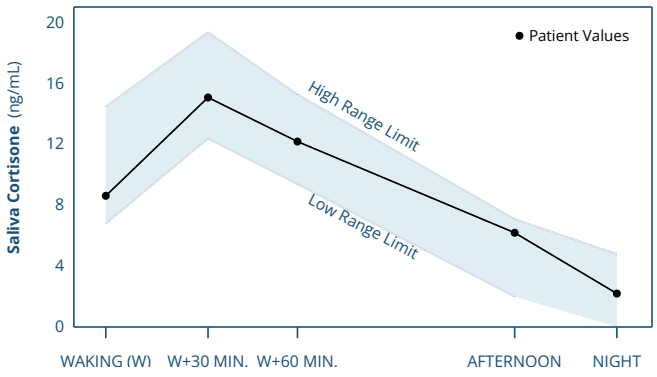
Adrenal Hormones & Metabolites

TEST		RESULT	UNITS	NORMAL RANGE
Free Cortisol and Cortisone (Saliva)				
Saliva Cortisol - Waking (W)	Within range	2.52	ng/mL	1.6 - 4.6
Saliva Cortisol - W+30 min.	High end of range	7.80	ng/mL	3.7 - 8.2
Saliva Cortisol - W+60 min.	Above range	5.40	ng/mL	2.3 - 5.3
Saliva Cortisol - Afternoon	Above range	1.70	ng/mL	0.4 - 1.5
Saliva Cortisol - Night	Within range	0.50	ng/mL	0 - 0.9
Saliva Cortisone - Waking (W)	Within range	8.63	ng/mL	6.8 - 14.5
Saliva Cortisone - W+30 min.	Within range	15.10	ng/mL	12.4 - 19.4
Saliva Cortisone - W+60 min.	Within range	12.20	ng/mL	9.4 - 15.3
Saliva Cortisone - Afternoon	Within range	6.20	ng/mL	2 - 7.1
Saliva Cortisone - Night	Within range	2.20	ng/mL	0 - 4.8
Saliva Cortisol Total	High end of range	17.92	ng/mL	9.6 - 19.3
Saliva Cortisone Total	Within range	44.33	ng/mL	36 - 55
Creatinine (Urine)				
Creatinine A - Waking	Within range	0.50	mg/ml	0.3 - 3
Creatinine B - Morning	Within range	0.72	mg/ml	0.3 - 3
Creatinine C - Afternoon	Within range	0.48	mg/ml	0.3 - 3
Creatinine D - Night	Within range	0.34	mg/ml	0.3 - 3
Cortisol Metabolites and DHEA-S (Urine)				
a-Tetrahydrocortisol (a-THF)	Below range	140.0	ng/mg	175 - 700
b-Tetrahydrocortisol (b-THF)	Low end of range	1900.0	ng/mg	1750 - 4000
b-Tetrahydrocortisone (b-THE)	Below range	1950.0	ng/mg	2350 - 5800
Metabolized Cortisol (THF + THE)	Below range	3990.0	ng/mg	4550 - 10000
DHEA-S	Low end of range	110.0	ng/mg	30 - 1500
Cortisol Clearance Rate (CCR)	Below range	64.1		80 - 160
Additional Cortisol and Cortisone (Saliva)				
* Saliva Cortisol - Insomnia	Within range	0.42	ng/mL	0 - 0.9
* Saliva Cortisone - Insomnia	Within range	2.10	ng/mL	0 - 4.8

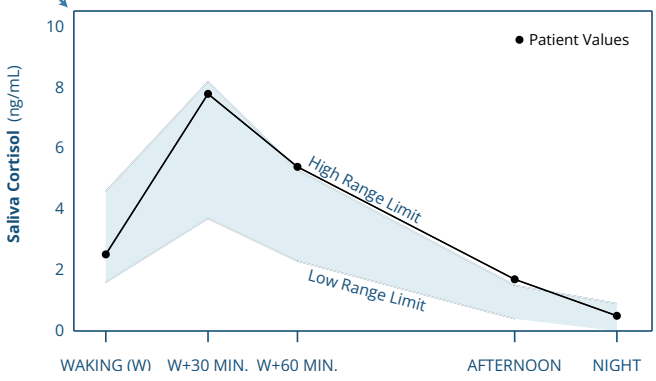
ADRENAL HORMONES & METABOLITES

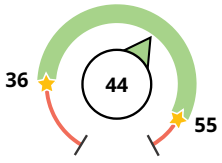


Saliva Free Cortisone Pattern



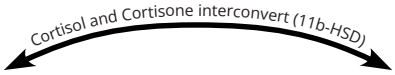
Saliva Free Cortisol Pattern

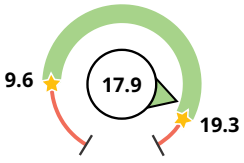




Saliva Cortisone Total

Sum of 5 values





Saliva Cortisol Total

Sum of 5 values

The patient submitted an Insomnia salivary sample. The cortisol result for this sample was **0.42ng/mL** (expected range 0-0.9) The cortisone result for this sample was **2.10 ng/mL** (expected range 0-4.8).

The Cortisol Awakening Response (CAR) is the rise in salivary cortisol between the waking sample and the sample collected 30 minutes later. This patient shows a waking cortisol of **2.52ng/mL** and an increase to **7.8ng/mL** after 30.0 minutes. This is an increase of **5.3ng/mL** or **210%**. Preliminary research shows that 50-160% or 1.5-4.0ng/mL increases are common with samples collected 30 minutes after waking. These guidelines are considered research only.
This patient shows a salivary cortisol of **5.4ng/mL** measured 60 minutes after waking. This is an increase of **2.88ng/mL** or **114%** compared to the waking sample. To date, data suggests that expected results may be 0-70%, and this guideline is considered for research only.

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2022-06-13 08:00PM (U)

Ordering Provider:
Precision Analytical

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	2.9	ug/mg	0 - 3.5
Vitamin B6 Markers - May be deficient if high				
Xanthurenate	Above range	2.20	ug/mg	0.2 - 1.9
Kynurenate	High end of range	6.4	ug/mg	1 - 6.6
Biotin Marker - May be deficient if high				
b-Hydroxyisovalerate	Above range	23.0	ug/mg	0 - 18
Glutathione Marker - May be deficient if low or high				
Pyroglutamate	Within range	62.0	ug/mg	38 - 83
Gut Marker - Potential gut putrefaction or dysbiosis if high				
Indican	Within range	90.4	ug/mg	0 - 131
Neuro-Related Markers (Urine)				
Dopamine Metabolite				
Homovanillate (HVA)	Low end of range	4.4	ug/mg	4 - 16
Norepinephrine/Epinephrine Metabolite				
Vanilmandelate (VMA)	High end of range	7.3	ug/mg	2.5 - 7.5
Neuroinflammation Marker				
Quinolinate	Within range	9.1	ug/mg	0 - 12.5
Additional Markers (Urine)				
Melatonin - Waking				
6-OH-Melatonin-Sulfate	Below range	7.8	ng/mg	10 - 85
Oxidative Stress / DNA Damage				
8-Hydroxy-2-deoxyguanosine (8-OHdG)	Within range	3.7	ng/mg	0 - 8.8

Clinical Support Overview

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

Please take a moment to read through the Clinical Support Overview below. These comments are specific to the patient's lab results. These comments are intended for educational purposes only. Specific treatment should be managed by a healthcare provider.

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

Alert Comments:

How to read the DUTCH report

This report is not intended to treat, cure or diagnose any specific diseases.

DUTCH DIALS

The graphic dials in this report are intended for quick and easy evaluation of hormone levels. The green highlighted area between the stars shows the normal range. Results below the left star and beyond the right star are shaded red representing below and above the normal range respectively. The arrow points to the patient's result and will be the color of the result status (ie red for out of range, green for in range).

Low Example

Normal Example

High Example

NEW! - AGE DEPENDENT RANGES

Age-dependent ranges for males are are used on the **androgen** dials.

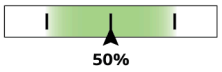
Males commonly go through a decline in androgen production starting around age 40. These dials use light green for optimal levels for ages 18-40 and dark green for ages 41 and beyond. Note that the arrow pointer changes color to the range it points to, with a preference for the light green when the ranges overlap.


Androgens

Optimal Range for Age 18 - 40 | Optimal Range for Age 41 - 60+ | Out of Range

DUTCH SLIDERS

The graphic sliders indicate the relative ratio of the metabolites noted on the slider. The percentage stated is a population percentage. A result of 50% indicates that the ratio is higher than 50% of individuals tested, or right in the middle of the population's range. If the result is lower than 50% it will move to the left and higher than 50% will move to the right. The normal range is shaded green and out of range is shaded white.



For more information about the new slider bars, please click to read our DUTCH Blog.

Patient or Sample Comments
You will find comments specific to the patient results in each section below in bulleted text. Please refer to our DUTCH resources for further information on interpreting results.

ANDROGENS
When evaluating androgen levels, it is important to assess the following:

Androgen Levels
Review Testosterone and Total DHEA levels for insight into androgen production. While urinary testosterone levels generally agree well with serum testosterone levels, there are some cases where they do not. We recommend using serum testing to confirm a low testosterone result on the DUTCH test.

Androgen Metabolism
5a-reductase converts testosterone into 5a-DHT (DHT), which is even more potent (~3x) than testosterone. The best representation of tissue 5a-DHT and overall androgen status, is 5a-Androstanediol. Metabolites created down the 5b-pathway are significantly less androgenic than their 5a counterparts.

- The 5a-Androstanediol is low for a man of any age. 5a-androstanediol is a target tissue metabolite of 5a-DHT, the body's most potent androgen. Low 5a-androstanediol indicates low tissue 5a-DHT. Review testosterone and DHEA results, the patient's symptoms, as well as the 5a-reductase activity slider for complete information on androgen status. You can find more information about this here.
- The 5a-Reductase Activity result is low. This slider result indicates that there are more 5b androgens (liver detox metabolites) relative to 5a androgens (target tissue androgen activation) but does not tell us if the 5a androgens are low on their own. It is still important to assess the level of these potent androgens. Review other comments and DUTCH androgen results for further insight. In men, low 5a-reductase activity may be associated with low androgen symptoms.

ESTROGEN
When evaluating estrogen levels, it is important to assess the following:

Estrogen Levels
The status (low, normal or high?) of estrogen production: Estradiol (the strongest estrogen) is made primarily from aromatization of testosterone in peripheral tissues such as testes, adipose, liver, skin, muscle, etc.

- The estradiol (E2) result is high. When E2 is high in men, it can cause breast tissue growth, impaired sexual function, impaired fertility, mood changes, and changes in body fat distribution towards the hips and thighs. In men, E2 is a product of the peripheral conversion of testosterone and other androgens via the aromatase enzyme. High E2 in men can be caused by obesity, insulin resistence, liver disease, and high testosterone, among others.

Estrogen Metabolism

- The 2-OH/16-OH-E1 is low. This indicates less 2-OH and/or more 16-OH. The 2-OH is considered a beneficial phase 1 detox pathway because it is stable, anti-estrogenic, and anti-carcinogenic. But in this case there is more 16-OH-E1 which is not ideal because this pathway is more estrogenic, proliferative, and is associated with inflammation.

- The 2-OH/4-OH-E1 is low. This indicates less 2-OH and/or more 4-OH. The 2-OH is considered a beneficial phase 1 detox pathway because it is stable, anti-estrogenic, and anti-carcinogenic. But in this case there is more 4-OH-E1 which is not ideal because this pathway is unstable, can form reactive quinones that cause DNA damage, and has been associated with increased breast cancer risk.

PROGESTERONE
The DUTCH Test measures the two main urinary metabolites of progesterone, 5b-pregnanediol and 5a-pregnanediol.

- The progesterone metabolites shows progesterone is in range indicating normal production.

CORTISOL
Review the Cortisol Awakening Response, the percent increase from waking to 30 minutes. Next review the sum of free cortisol as an expression of overall tissue cortisol exposure.

Free Cortisol Levels

- The patient submitted an Insomnia salivary sample. The cortisol result for this sample was **0.42ng/mL** (expected range 0-0.9). The cortisone result was **2.10ng/mL** (expected range 0-4.8).

Cortisol Metabolism

- The Cortisol Clearance Rate is low. This indicates the level of metabolized cortisol is significantly lower than the level of free cortisol and free cortisone. Slow cortisol clearance occurs with low levels of 5a and 5b-reductase. This occurs with hypothyroidism, cholestasis, anorexia, liver cirrhosis, and critical illness. The HPA axis can adjust cortisol excretion to maintain normal levels of free cortisol, but slow clearance can result in lower ACTH and all adrenal products (such as DHEA). In some cases, slow cortisol clearance leads to high free cortisol and high cortisol symptoms due to slow clearance.

NUTRITIONAL ORGANIC ACIDS
Organic acids begin to build up when a nutrient cofactor or mineral is not present for a specific reaction to occur.

- The b-hydroxyisovalerate is high. Elevated urinary b-hydroxyisovalerate indicates impaired biotin (B7) dependent leucine catabolism. Signs and symptoms of low biotin include skin rashes, hair loss, tingling in the hands and feet, mood changes, poor immune function, poor sleep and more.

- The xanthurenate level is high. This can indicate low vitamin B6 from not eating B6, not absorbing it, not activating it, not having the co-factors to activate it/circulate it, or from conditions like Pyroluria that bind up B6, impairing absorption. B6 is important for estrogen methylation and neurotransmitter production and can help make cysteine (glutathione/pyroglutamate) in the transsulfuration pathway. Xanthurenate can bind iron to increase oxidative stress and thus 8OHdG. It can also bind with insulin, increasing the risk of blood sugar or insulin problems. Some treatments include increasing dietary B6, supplementing with B6, and testing for B6 co-factors such as B2, Zinc, ATP, and Lysine. Consider addressing any small intestinal issues and reducing inflammation. If tryptophan supplements are taken within 72 hours of collecting DUTCH samples, xanthurenate may be high in urine without indicating a B6 deficiency. Please keep supplements in mind when interpreting results.

NEURO-RELATED MARKERS

ADDITIONAL MARKERS

- The waking urinary 6-OH-Melatonin-Sulfate is low. This reflects low overnight production of melatonin. This may be implicated in poor sleep and insomnia.

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 05.20.2025)									
	Low%	High%	Low	High		Low%	High%	Low	High
b-Pregnanediol	10%	90%	75	400	Saliva Cortisol Waking (W)	20%	90%	1.6	4.6
a-Pregnanediol	10%	90%	20	130	Saliva Cortisol (W+30 min.)	20%	90%	3.7	8.2
Estrone (E1)	10%	90%	4	16	Saliva Cortisol (W+60 min.)	20%	90%	2.3	5.3
Estradiol (E2)	10%	90%	0.5	2.2	Saliva Cortisol (Afternoon)	20%	90%	0.4	1.5
Estriol (E3)	10%	90%	2	8	Saliva Cortisol (Night)	0	95%	0	0.9
2-OH-E1	0	90%	0	5.9	Saliva Cortisol (2-3 am)	0	90%	0	0.9
4-OH-E1	0	90%	0	0.8	Saliva Cortisone Waking (W)	20%	90%	6.8	14.5
16-OH-E1	0	90%	0	1.2	Saliva Cortisone (W+30 min.)	20%	90%	12.4	19.4
2-Methoxy-E1	0	90%	0	2.8	Saliva Cortisone (W+60 min.)	20%	90%	9.4	15.3
2-OH-E2	0	90%	0	1.2	Saliva Cortisone Afternoon	20%	90%	2	7.1
4-OH-E2	0	90%	0	0.25	Saliva Cortisone Night	0	95%	0	4.8
2-16-ratio	20%	80%	2.85	9.88	Saliva Cortisone (2-3 am)	0	95%	0	4.8
2-4-ratio	20%	80%	6.44	12.6	Cortisol Clearance Rate (CCR)	20%	80%	80	160
2Me-2OH-ratio	20%	80%	0.4	0.7	Melatonin (6-OHMS)	20%	90%	10	85
DHEA-S	20%	90%	30	1500	8-OHdG	0	90%	0	8.8
Androsterone	20%	80%	500	3000	Methylmalonate	0	90%	0	3.5
Etiocholanolone	20%	80%	400	1500	Xanthurenate	0	90%	0.2	1.9
Testosterone	20%	90%	25	115	Kynurenate	0	90%	1	6.6
5a-DHT	20%	90%	5	25	b-Hydroxyisovalerate	0	90%	0	18
5a-Androstanediol	20%	90%	30	250	Pyroglutamate	10%	90%	38	83
5b-Androstanediol	20%	90%	40	250	Indican	0	90%	0	131
Epi-Testosterone	20%	90%	25	115	Homovanillate	10%	95%	4	16
a-THF	20%	90%	175	700	Vanilmandelate	10%	95%	2.5	7.5
b-THF	20%	90%	1750	4000	Quinolinate	0	90%	0	12.5
b-THE	20%	90%	2350	5800	**Calculated Values**				
					Total DHEA Production	20%	80%	1000	5500
% = 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."					Total Estrogens	10%	90%	10	34
					Metabolized Cortisol	20%	90%	4550	10000
					Saliva Cortisol Total	20%	90%	9.6	19.3
					Saliva Cortisone Total	20%	90%	36	55