dutchtest® ORGANIC ACIDS

Accession # 01036011

Male Sample Report
123 A Street
Sometown, CA 90266

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

Collection Times:

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

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.

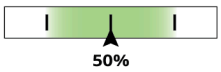
Males commonly go through a decline in androgen production starting around age 40. These dials use light green for optimal levels for ages 18-40 and dark green for ages 41 and beyond. Note that the arrow pointer changes color to the range it points to, with a preference for the light green when the ranges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

CORTISOL

Review the daily pattern of free cortisol throughout the day, looking for low and high levels and noting what time they occur. Next review the sum of free cortisol as an expression of overall tissue cortisol exposure.

Free Cortisol Levels

- Overall free cortisol levels are within range, but metabolized cortisol (the best marker for overall cortisol production) is low. This implies that overall HPA-Axis is low. Cortisol clearance may be a bit sluggish, which keeps free cortisol levels within range in spite of low overall production. Hypothyroidism and other conditions may lead to slow cortisol metabolism. If treating the patient for potential thyroid issues be sure to take into account the interplay between the thyroid and adrenals.

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	Cortisol A (waking)	20%	90%	13	80
a-Pregnanediol	10%	90%	20	130	Cortisol B (morning)	20%	90%	35	180
Estrone (E1)	10%	90%	4	16	Cortisol C (~5pm)	20%	90%	10	45
Estradiol (E2)	10%	90%	0.5	2.2	Cortisol D (bed)	0	90%	0	20
Estriol (E3)	10%	90%	2	8	Cortisone A (waking)	20%	90%	40	160
2-OH-E1	0	90%	0	5.9	Cortisone B (morning)	20%	90%	80	240
4-OH-E1	0	90%	0	0.8	Cortisone C (~5pm)	20%	90%	40	130
16-OH-E1	0	90%	0	1.2	Cortisone D (bed)	0	90%	0	70
2-Methoxy-E1	0	90%	0	2.8	Cortisol Clearance Rate (CCR)	20%	80%	8.5	17.5
2-OH-E2	0	90%	0	1.2	Melatonin (6-OHMS)	20%	90%	10	85
4-OH-E2	0	90%	0	0.25	8-OHdG	0	90%	0	8.8
2-16-ratio	20%	80%	2.85	9.88	Methylmalonate	0	90%	0	3.5
2-4-ratio	20%	80%	6.44	12.6	Xanthurenate	0	90%	0.2	1.9
2Me-2OH-ratio	20%	80%	0.4	0.7	Kynurenate	0	90%	1	6.6
DHEA-S	20%	90%	30	1500	b-Hydroxyisovalerate	0	90%	0	18
Androsterone	20%	80%	500	3000	Pyroglutamate	10%	90%	38	83
Etiocholanolone	20%	80%	400	1500	Indican	0	90%	0	131
Testosterone	20%	90%	25	115	Homovanillate	10%	95%	4	16
5a-DHT	20%	90%	5	25	Vanilmandelate	10%	95%	2.5	7.5
5a-Androstanediol	20%	90%	30	250	Quinolinate	0	90%	0	12.5
5b-Androstanediol	20%	90%	40	250	**Calculated Values**				
Epi-Testosterone	20%	90%	25	115	Total DHEA Production	20%	80%	1000	5500
a-THF	20%	90%	175	700	Total Estrogens	10%	90%	10	34
b-THF	20%	90%	1750	4000	Metabolized Cortisol	20%	90%	4550	10000
b-THE	20%	90%	2350	5800	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 women tested for the reference range will be designated as "high."