

HPA-D DUTCH Test Part 2 Review

The DUTCH comprehensive hormone profile provides the total DHEA value, which is a combination of DHEA sulfate and two DHEA metabolites, etiocholanolone and androsterone. Measuring this combination gives you a better idea of overall DHEA production than looking at DHEA sulfate alone. One reason for this is that sulfation can be upregulated or downregulated in certain disease states. This can give a falsely low or high impression of DHEA if you only measure DHEA sulfate. The DUTCH advanced adrenal panel only reports DHEA sulfate.

OTHER MARKERS

1. High DHEA
 - a. The DHEA range is age and gender specific, and the DUTCH test results report takes that into account.
 - b. Primary causes of high DHEA are PCOS, acute stress, obesity, benzodiazepine use (drugs such as Xanax), and antidepressant use.
2. Low DHEA
 - a. DHEA can be low with stress, aging, rapid weight loss, opioids, glucocorticoids, birth control pills, hormone replacement therapy, antipsychotics, and some diabetes medications.
3. Normal total DHEA with low/high DHEA-S
 - a. Not a common presentation.
 - b. You will sometimes see discordance between total DHEA and DHEA sulfate.
 - c. The two primary causes of low DHEA sulfate are inflammation and glucocorticoid use.
 - d. A slightly elevated DHEA sulfate is probably not pathological if all of the other markers are normal.
 - e. Possible causes of significantly elevated DHEA sulfate and normal total DHEA are things that upregulate sulfation such as a high-protein diet, some liver detox supplements or botanicals, and methylation supplements.
4. Cortisol/cortisone Imbalance
 - a. Cortisol is the more active form of the hormone, and cortisone is the less active form. These are interconverted back and forth, primarily by 11β -HSD.
 - b. Factors that favor more cortisone include hyperthyroidism; human growth hormone; estradiol; good sleep; drugs such as ketoconazole; adaptogenic herbs such as magnolia, scutellaria, ziziphus; and hormones such as testosterone.
 - c. Factors that favor more cortisol include hypothyroidism, inflammation, visceral obesity, high insulin, excess sodium, and licorice, which increases the half-life of circulating cortisol.

- d. If cortisol is normal or low but cortisone is high, mentally I pull the cortisol level up a bit.
 - i. Low/normal cortisol and high cortisone indicates that a large amount of free cortisol is being inactivated into cortisone in the kidney.
 - ii. Poor thyroid function can lead to sluggish clearance of cortisol and cortisone into their terminal metabolites.
 - e. If cortisol is normal or high but cortisone is very low, I would mentally pull cortisol down a bit. Example: A patient's thyroid dose was too high. This was causing a facetious hyperthyroid condition which led to inactivation of cortisol to cortisone.
5. Low/high melatonin
- a. 6-OH melatonin sulfate is a good representation of the night's production of melatonin, but it cannot be used to monitor therapy.
 - b. Melatonin plays a crucial role in regulating body temperature, the sleep-wake cycle, female reproductive hormones, and cardiovascular function.
 - c. Low melatonin has been observed in anxiety, stress, depression, seasonal affective disorder, sleep disorders, delayed sleep phase syndrome, immunological disorders, cardiovascular disease, and cancer.
 - d. High melatonin without supplementation has been observed in certain neuroinflammatory conditions.
 - e. Cortisol opposes melatonin, and melatonin opposes cortisol.
 - f. For example, patient with primary concern of sleep issues:
 - i. He had high cortisol, which can suppress melatonin production, and this explains why he wakes up at 3 to 4 a.m. and can't get back to sleep.
 - g. Patient with Lyme disease had a slightly high melatonin:
 - i. This is consistent with Lyme disease because Lyme often affects the brain and central nervous system and causes neuroinflammation.

CORTISOL AWAKENING RESPONSE

You can test CAR with the DUTCH Plus Cortisol Awakening Response <https://dutchtest.com/info-dutch-plus/#cortisol-awakening-response>

CORTISOL AWAKENING RESPONSE (CAR) INDICATIONS

Elevated	Decreased
Job-related stress	Depression
High perceived stress	Schizophrenia
Depression	PTSD
Anxiety	Psychosocial burnout
Faster M.S. progression	Chronic fatigue syndrome
Acute coronary syndrome	Type 2 diabetes

SUMMARY

Pattern	Indication
High free cortisol (with normal or high total) & elevated C.A.R.	Perceived stress, inflammation, circadian disruption, Cushing's
High nighttime/evening free cortisol	Depression, sleep deprivation, PTSD, cognitive impairment, circadian disruption, type 2 diabetes, Cushing's syndrome/disease
Disrupted diurnal rhythm only	Fatigue, sleep disturbance, stress/HPA axis activation, non-pathological
Low free cortisol (with low or normal total) & low C.A.R.	Metabolic syndrome, fibromyalgia, CFS, chronic pain, cardiometabolic disease, mood disorders, autoimmune disease, cancer, Addison's disease, corticosteroid/opioid use
High free cortisol with low total	Hypothyroidism, licorice supplementation, inflammation, normal/nonpathological
Low free cortisol with high total	Obesity, insulin resistance, hyperthyroidism, chronic stress, glucocorticoid use, chronic fatigue syndrome
High DHEA	PCOS, acute stress, obesity, benzodiazepenes (e.g. Xanax), antidepressants (e.g. Wellbutrin), A.D.D. meds
Low DHEA	Stress, aging, rapid weight loss, opioids, glucocorticoids, birth control, HRT/estrogens, antipsychotics, diabetes meds
High cortisol:cortisone ratio	Hypothyroidism, inflammation, visceral obesity, high insulin, excess sodium, and licorice
Low cortisol:cortisone ratio	Hyperthyroidism, hGH, estradiol, good sleep, ketoconazole, magnolia, scutellaria, zizyphus, and testosterone
Low melatonin	Anxiety, stress, depression, seasonal affective disorder, sleep disorders, immunological disorders, cardiovascular disease, cancer
High melatonin	Neuroinflammatory conditions