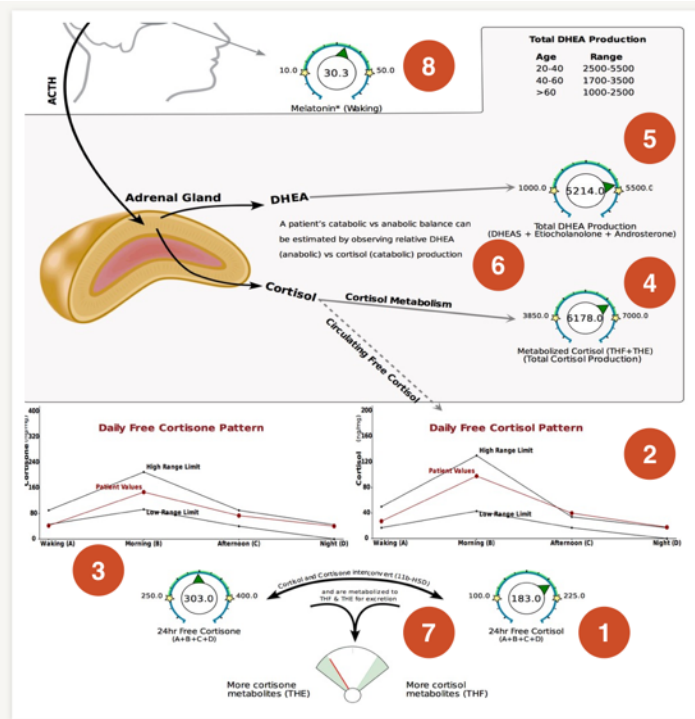


# Adrenal Profile Interpretation Guide

The DUTCH Complete Hormone Profile is the most thorough and preferred option for testing hypothalamic-pituitary-adrenal (HPA) axis function. It provides an assessment of total cortisol production, the diurnal free cortisol and free cortisone rhythms, cortisol metabolites (indicating rate of cortisol metabolism), DHEA, melatonin, and sex hormones (estrogens, estrogen metabolites, progesterone metabolites, androgens, etc.). The Adrenal Panel is a good option if you prefer not to include or interpret sex hormones, though the disadvantage is that it does not come with androsterone, etiocholanolone or melatonin (though melatonin can be added for a fee).

PATTERN	INDICATION
<b>High free cortisol</b> (with normal or high total)	Perceived stress, inflammation, circadian disruption, Cushing's syndrome
<b>High evening free cortisol</b>	Depression, sleep deprivation, PTSD, cognitive impairment, circadian disruption, type 2 diabetes, Cushing's syndrome
<b>Disrupted diurnal rhythm</b> (with otherwise normal cortisol production)	Fatigue, sleep disturbance, stress/HPA axis dysfunction, non-pathological
<b>Low free cortisol</b> (with low or normal total)	Metabolic syndrome, fibromyalgia, CFS/ME, chronic pain, cardiometabolic disease, mood disorders, autoimmune disease, cancer, Addison's disease, corticosteroid or opioid use
<b>High free cortisol with low total cortisol</b>	Hypothyroidism, licorice supplementation, inflammation, normal
<b>Low free cortisol with high total</b>	Obesity, insulin resistance, hyperthyroidism, chronic stress, glucocorticoid use, CFS/ME
<b>High DHEA</b>	PCOS, acute stress, obesity, benzodiazapenes (e.g., Xanax), antidepressants (e.g., Wellbutrin), ADHD meds
<b>Low DHEA</b>	Stress, aging, rapid weight loss, opioids, glucocorticoids, hormones (i.e., hormonal contraception or HRT), antipsychotics, diabetes meds
<b>High cortisol-to-cortisone ratio</b>	Hypothyroidism, inflammation, visceral obesity, high insulin, excess sodium, and licorice
<b>Low cortisol-to-cortisone ratio</b>	Hyperthyroidism, hGH, estradiol, ketoconazole, magnolia, scutellaria, zizyphus, and testosterone
<b>Low melatonin</b>	Anxiety, stress, depression, seasonal affective disorder, sleep disorders, immunological disorders, cardiovascular disease, cancer
<b>High melatonin</b>	Neuroinflammatory conditions

# Adrenal Profile Algorithm



- 1 24-hour free cortisol
- 2 Diurnal cortisol rhythm
- 3 Free cortisone rhythm/total free cortisone
- 4 Cortisol metabolites
- 5 Total DHEA production
- 6 Cortisol:DHEA ratio
- 7 Cortisol:cortisone balance
- 8 Melatonin

1. **24-Hour Free Cortisol:** The first thing is to check free cortisol. Is it high? Is it low? Or is it normal?
2. **Diurnal Cortisol Rhythm:** Next, check the free cortisol diurnal rhythm. Is that normal or out of range?
3. **Free Cortisone Rhythm/Total Free Cortisone:** Then check the free cortisone rhythm and total free cortisone. Compare them with free cortisol to see if the readings support one another. Use total free cortisone as an overall reality check to total free cortisol. If total free cortisone is low-normal but total free cortisone is high, then I would revise that estimate for free cortisol up a little bit and vice versa.
4. **Cortisol Metabolites:** The next thing to check is metabolized cortisol. Again, is it low? Is it high? Is it normal? Is it concordant with free cortisol and free cortisone, or is it discordant with free cortisol and cortisone? In other words, is this one of these patterns where you see high free cortisol and low metabolized cortisol, or is it a pattern where you see low free cortisol and high metabolized cortisol?
5. **Total DHEA Production:** Step five is to check total DHEA. Total DHEA includes DHEA sulfate, androsterone, and etiocholanolone if you're using the comprehensive panel but only DHEA sulfate if you're using the adrenal panel. It is preferable to have all three of those markers, as it can bias the overall treatment approach and also provide you some useful information. For

example, if you see low DHEA-S but androsterone and etiocholanolone are high, that could suggest inflammation because inflammation inhibits sulfation in general and sulfation of DHEA in particular.

6. **Cortisol-to-DHEA Ratio:** Next check the cortisol-to-DHEA ratio. You don't need to actually calculate it—just qualitatively look at it and see if the patient is producing a lot more cortisol relative to DHEA. If so, that means they're in a catabolic state, which causes a lot of wear and tear on the body. In this case, treating the cortisol issue becomes a higher priority.
7. **Cortisol-to-Cortisone Metabolite Balance:** This also biases overall cortisol findings, so if you see a relative excess of cortisol compared with cortisone, that's observed in hypothyroidism, inflammation, visceral obesity, high insulin, excess sodium, and licorice supplements. If you see more cortisone, that's observed in hyperthyroidism, human growth hormone, estradiol, good sleep, ketoconazole, magnolia, scutellaria, ziziphus, and testosterone.
8. **Melatonin:** Then final step is to look at melatonin. This is often discordant with cortisol and can also bias the treatment and provide information on its own. If melatonin is very low, you might use more supplements and interventions for circadian disruption. If it's high without supplementation, you would be looking at the possibility of neuroinflammation.