



Overview of Dried Urine Test for Comprehensive Hormones (DUTCH)

Nordic Laboratories offers several hormone tests utilising a simple, validated, dried urine collection. Dried urine is easy to collect, allowing the practitioner to investigate both the free hormone levels but importantly also those hormones are metabolised.

To help our valued practitioners to be up to date with our offerings, we have created the following overview of the different tests.

DUTCH Complete™

DUTCH Complete™ is the first DUTCH test in the family. It offers the most extensive profile of sex hormones and their related metabolites. Additionally, it reports on the total and diurnal pattern of free cortisol and cortisone, as well as cortisol metabolites and levels of melatonin (6-OH-Melatonin-Sulfate) and oxidative stress (8-hydroxy-2-deoxyguanosine).

DUTCH Complete also includes the following organic acid markers, which add tremendous value to the test because of the further insights they offer into metabolic areas important for hormone and neurotransmitter balance.

- **Neurotransmitter metabolites:** HVA (adrenalin/noradrenalin), VMA (dopamine), 5HIAA (serotonin)
- **Nutritionally related markers:** MMA (B12), Xanthurenate (B6), Pyroglutamate (glutathione)

The DUTCH Complete™ uses 4-5 dried urine samples collected over a 24-hour period.

For menstruating women, the sample must be collected on day 19-21 of their menstrual cycle. For non cycling women and men, the test can be collected on any day.

DUTCH Plus™

The DUTCH Plus™ takes hormone testing to a whole new level. It includes everything that is in DUTCH Complete™. In addition, the DUTCH Plus™ offers the Cortisol Awakening Response, bringing another important piece of the HPA axis into focus. Additional [Insomnia](#) overnight cortisol collection is also available with the DUTCH Plus™.

The DUTCH Plus™ uses 4-5 dried urine samples and 5-6 saliva samples collected over a 24-hour period.

For menstruating women, the sample must be collected on day 19-21 of their menstrual cycle.

For non cycling women and men, the test can be collected on any day.

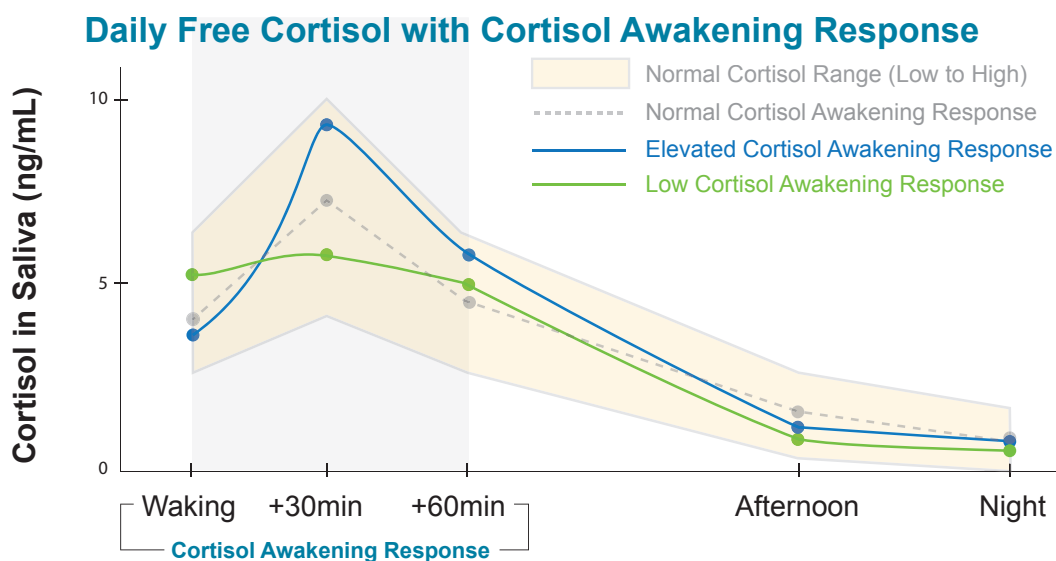
What is the Cortisol Awakening Response (CAR) and how do we test for it?

When we open our eyes upon waking, cortisol levels naturally begin to rise by an average of 50%. 30 minutes after waking, cortisol levels will still show this sharp increase. By 60 minutes after waking, cortisol levels have peaked and begin to decline. Measuring this rise and fall of cortisol levels at waking can be used as a “mini stress test”. Research shows that the size of this increase correlates with HPA-axis function. A quick saturation of saliva swabs upon waking, and then again at 30 as well as 60 minutes after waking, provide what is required to assess a patient’s Cortisol Awakening Response. A low or blunted Cortisol Awakening Response can be a result of an underactive HPA axis, excessive psychological burnout, seasonal affective disorder (SAD), sleep apnea or poor sleep in general, PTSD, chronic fatigue and/or chronic pain. A decreased CAR has also been associated with systemic hypertension, functional GI diseases, postpartum depression, and autoimmune diseases.

An elevated Cortisol Awakening Response can be a result of an over-reactive HPA axis, ongoing jobrelated stress (anticipatory stress for the day), glycemic dysregulation, pain (i.e. waking with painful joints or a migraine), and general depression (not SAD). The CAR calculation (the change between the first two samples) correlates with Major Depressive Disorder. This measurement of the response to waking has independent clinical value showing dysfunction that may be hidden by current testing options.

What can the DUTCH Plus™ tell us that the DUTCH Complete™ and other adrenal tests cannot?

Even though a patient may have “normal” free cortisol levels throughout the day, that doesn’t always mean everything is functioning properly. The graph below shows two good examples. A blunted or exaggerated CAR can appear, even when single samples return “normal” results. The HPA axis might not be appropriately responding when faced with a stressor, even when cortisol levels are fluctuating nicely throughout the day. The “stress” of waking, allows us to test the HPA axis in a way that has been independently correlated to clinical outcomes and cannot be assessed by other cortisol tests on the market. The additional overnight Insomnia cortisol measurement offers valuable additional information about cortisol’s potential causal role in sleep disturbances.



DUTCH Cycle Mapping™

The DUTCH Cycle Mapping™ offers levels of oestrogen and progesterone throughout a 30 day menstrual cycle. For some women, testing reproductive hormones (progesterone and oestrogen) on a single day is sufficient. In other scenarios, the clinical picture cannot be properly captured without “mapping” out the hormonal pattern throughout their menstrual cycle. The expected pattern of hormones shows relatively low oestrogen levels early in the cycle, a surge around ovulation and modest levels in the latter third of the cycle (the luteal phase). Progesterone levels, on the other hand, stay relatively low until after ovulation. After ovulation levels ideally increase (>10-fold) and then drop back down at the end of the cycle. A disruption in this cycle can lead to infertility or hormonal imbalance.

The test is recommended for women:

Struggling with infertility, with cycling hormones and no menses, with partial hysterectomy (ovaries intact but no uterus), those who have had ablations, Mirena or similar hormonal IUD (no actual menstrual bleeding due to IUD but still has hormonal symptoms), with irregular cycles, with PCOS, who has luteal phase shifts from month-to-month, who is not sure when to test due to long or short cycles, whose hormonal symptoms tend to fluctuate throughout the cycle, with PMS, mid-cycle spotting, migraines, etc.

When not to recommend a DUTCH Cycle Mapping™ and a DUTCH Complete™ is sufficient

Postmenopausal women, women on birth control, women with cycles that follow the expected pattern.

The DUTCH Mapping™ is carried out over approximately 30 days and uses 15 one-a-day dried urine samples. If DUTCH PLUS or DUTCH complete is added to it, 4-5 dried urine samples collected over a 24-hour period is done at the beginning of the next cycle.

DUTCH Sex Hormone Metabolites

DUTCH Sex Hormone Metabolites test offers the most extensive profile of sex hormones and their related metabolites. This test does not include Adrenal hormones, Oxidative Stress, Melatonin, nor Organic acids.

DUTCH Sex Hormone Metabolites test uses 4-5 dried urine sample collected upon waking.

For menstruating women, the sample must be collected on day 19-21 of their menstrual cycle. For non cycling women and men, the test can be collected on any day.

DUTCH Adrenal™

This advanced Adrenal Hormone Test was developed to improve on the available hormone testing options. The DUTCH Adrenal provides free cortisol patterns that parallel saliva with the addition of metabolite measurements for an improved marker for total cortisol production. The result includes the following metabolites:

- **Daily free cortisol pattern (based on 4-5 urine collections)**
- **Daily free cortisone pattern (based on 4-5 urine collections)**
- **Cortisol metabolites (a-THF, b-THF)**
- **Cortisone metabolites (b-THE)**
- **DHEAs**

This test does not include Sex Hormones, Oxidative Stress, Melatonin, nor Organic acids.

The DUTCH Adrenal™ uses 4-5 dried urine samples collected over a 24-hour period.

DUTCH CAR™

DUTCH CAR™ (Cortisol Awakening Response) offers the Cortisol Awakening Response as a standalone test. It reports the overall diurnal pattern of free cortisol.

This test does not include Sex Hormones, Oxidative Stress, Melatonin, nor Organic acids. It does not include urinary cortisone, cortisol nor DHEA.

The DUTCH CAR™ uses 5 saliva samples collected over a 24-hour period. Additional Insomnia overnight cortisol saliva collection can also be added to the DUTCH CAR™ test.

In Nordic VMS you can also find the following combinations of tests:

- **DUTCH Cycle Mapping & DUTCH Complete**
- **DUTCH Cycle Mapping & DUTCH Plus (with insomnia)**