



Discover True Clinical Utility  
with the Industry's Most Complete

# NEURO ENDOCRINE TESTING

 ZRTLaboratory



## MOST COMPLETE

ZRT is the only lab to offer a 24-hour equivalent in four easy collections – resulting in a more accurate assessment of individual neurochemistry.



## MOST COMPREHENSIVE

ZRT combines 14 neurotransmitter tests with a collection of salivary or urinary hormones and metabolites, and/or urinary elements, for the broadest evaluation possible.



## MOST CONVENIENT

Discreet dried urine collection eliminates the hassle of liquid urine collection.



## NO SUPPLEMENT SALES

ZRT is dedicated to testing. Unlike other labs, we don't sell supplements - which avoids any conflict of interest.

# Why Test Neurotransmitters & Hormones?

In the neurological system, hormones are synergistic with neurotransmitters – modulating their production, signaling and metabolism. Because of this complex interplay, testing hormones and neurotransmitters together is the ideal way to generate a more precise clinical assessment.

This combined assessment gives practitioners a more thorough evaluation of the systems that interact to govern key facets of our health including mood, memory, energy, sleep, weight, libido and fertility. It allows practitioners to target specific imbalances and get to the root of persistent conditions such as HPA axis dysfunction, anxiety and depression, menstrual cycle disorders, PCOS, insulin resistance, dysregulation of the sympathetic nervous system, low libido and appetite control.

This evaluation also gives practitioners a diagnostic edge over the traditional psychological inventory. It offers the advantage of zeroing in on which therapies are best suited for individual patients – cutting down on the time-consuming process of trial-and-error for identifying treatment options. This testing also allows practitioners to monitor individual biochemical changes during and after intervention.

# Why Test Neurotransmitters & Elements?

Heavy metals are damaging to brain health. They disrupt neurotransmitter function and create oxidative stress that is detrimental to nerve cells, contributing to mood disorders, poor memory and dementia. Identifying exposure to heavy metals may be key to assessing and treating mood disorders and preventing neurodegenerative diseases.

In contrast, nutritional elements are generally protective for brain health. Lithium acts directly on the brain by slowing the progression of dementia and stabilizing mood, while elements like iodine and selenium act indirectly by supporting healthy thyroid and brain function.



# Hormone Regulation of Neurotransmitter Activity

## Estradiol & Serotonin

Estradiol synergizes serotonin signaling – stimulates biosynthesis, potentiates receptor activation, blocks re-uptake and inhibits degradation.

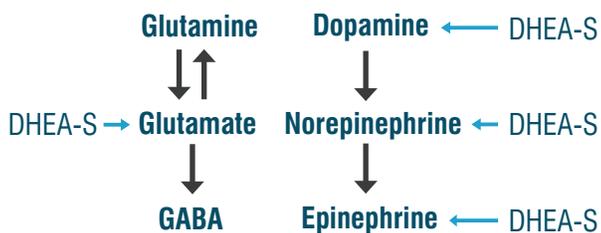


### Test when these symptoms are present:

- Hot Flashes
- Night Sweats
- Mood Changes
- Irritability
- Anxiety
- Depression

## DHEA-S

Stimulates adequate production of glutamate, dopamine, norepinephrine and epinephrine.

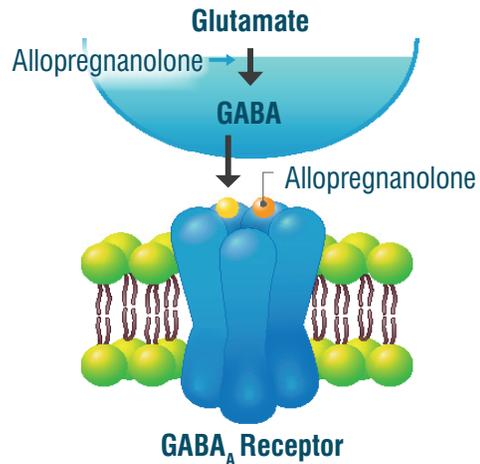


### Test when these symptoms are present:

- Decreased Stamina
- Fatigue
- Low Libido
- "Tired and Wired"
- Depression
- PTSD

## Progesterone & GABA

Via allopregnanolone, progesterone modulates GABA production and GABA<sub>A</sub> receptor signaling.

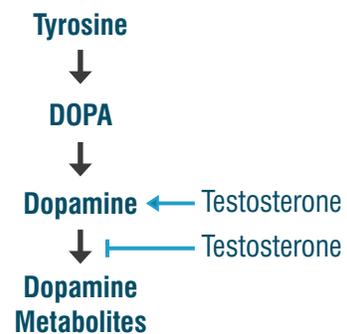


### Test when these symptoms are present:

- PMS/PMDD
- Anxiety
- Sleep Problems
- Depression
- Mood Changes

## Testosterone & Dopamine

Testosterone potentiates dopamine signaling – stimulates biosynthesis and blocks degradation.



### Test when these symptoms are present:

- Burned-Out Feeling
- Low Libido
- Irritability
- Addictive Behaviors
- Apathy
- Depression

# Functional Assessment of Key Markers

- **Serotonin**, generally regarded as the “happiness molecule,” contributes to the feeling of calm and well-being that eases depression and anxiety, supports sleep, and decreases appetite. (**5-HIAA** [5-hydroxyindoleacetic acid] is a serotonin metabolite).
- **GABA** functions as the “off” switch in the brain and is the major inhibitory neurotransmitter that improves mood, relieves anxiety, and promotes sleep.
- **Glycine** plays a dual role as a neurotransmitter and amino acid that serves as a building block of proteins, improves sleep quality, calms aggression, and serves as an anti-inflammatory agent.
- **Glutamate** functions as the “on” switch in the brain and is the major excitatory neurotransmitter that decreases sleep, optimizes learning, memory, and mood, and improves libido.
- **Histamine** plays a dual role in the body as a neurotransmitter and immunomodulator that increases metabolism, promotes wakefulness, and suppresses appetite.
- **PEA (phenethylamine)** promotes energy, elevates mood, regulates attention and aggression, and serves as a biomarker for ADHD.
- **Dopamine**, generally regarded as the brain’s pleasure and reward center, plays the central role in addiction, improves attention, focus and motivation, and modulates movement control. (**DOPAC** [3,4-dihydroxyphenylacetic acid] and **HVA** [homovanillic acid] are dopamine metabolites).
- **Norepinephrine** and **Epinephrine** function as neurotransmitters and hormones that regulate the “fight or flight” response and elevate blood pressure and heart rate, stimulate wakefulness, and reduce digestive activity. (**Normetanephrine** is a norepinephrine metabolite; **VMA** [vanillylmandelic acid] is an epinephrine and norepinephrine metabolite).

## Available Add-ons

### Hormone Panels

- ▶ **Saliva:** Estradiol, Progesterone, Testosterone, DHEA-S & Cortisol
- ▶ **Urine:** Estradiol, Pregnanediol, Allopregnanolone, Androstenedione, Testosterone, Epi-Testosterone, 5 $\alpha$ -Dihydrotestosterone (5 $\alpha$ -DHT), DHEA, 5 $\alpha$ ,3 $\alpha$ -Androstenediol

### Element Panel

- ▶ **Urine Elements:** Iodine, Selenium, Bromine, Lithium, Arsenic, Cadmium, Mercury

### Diurnal Panels

- ▶ **Diurnal Cortisol**
- ▶ **Diurnal Cortisol & Melatonin**
- ▶ **Diurnal Cortisol, Norepinephrine & Epinephrine**
- ▶ **Diurnal Cortisol, Melatonin, Norepinephrine & Epinephrine**



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