Comprehensive assessments of neuroendocrine status

- Salivary Sex Steroid Hormones and Adrenal/HPA Axis Function
- Neuro-Biogenic Amine and Metabolite Profiles (Neurotransmitters)
- Metabolomic Profile (risk assessment of Metabolic syndrome)
- Thyroid Profile
Saliva testing is rapidly replacing serum as the gold standard for hormonal and adrenal evaluation. Here’s why: saliva contains only the active portion of the body’s hormones. Therefore, saliva testing accurately measures the amount of free hormone being delivered to receptors in the body. Serum measures total hormone levels (both the inactive, (95-98%) and the active (2-5%) portions). When blood is filtered by the salivary glands, only the unbound hormones (free, active portion) are small enough to pass through and into the saliva. Convenient, easy, and stress-free sample collection (no needles or 24-hour urine collection) increases patient compliance to almost 100%.

Sex Steroid Hormones (free, unbound portion) fluctuate throughout the day and thus have many peaks and troughs. The graph above illustrates estradiol levels in two women at 10 minute intervals. All sex hormones exhibit such fluctuations. In order to obtain the most clinically accurate and truly representative results of an individual’s hormone status, Labrix averages four saliva specimens (collected throughout the day), thus minimizing the risk of reporting a peak or trough.

Each Labrix saliva kit contains four small, color-coded tubes. Upon arrival at the laboratory, Labrix takes an extra step to deliver the most clinically relevant results. A fifth tube of saliva is created by pooling an equal amount of saliva from each of the four submitted samples into this additional tube. This pooled tube is mixed thoroughly to provide homogenization and becomes the saliva source from which estriol, estradiol, estrone, progesterone, testosterone and DHEA are measured. This extra step provides the clinician with a far superior reflection of each patient’s hormonal status.

For more information about all available tests, clinical information and sample reports, visit labrix.com.
**About Labrix**

**The Endocrine Division of Doctor’s Data**

Labrix was founded by clinicians Jay H. Mead, MD, FASCP and Erin T. Lommen, ND with the goal of raising the bar on quality hormone testing. With Dr. Mead’s 35 years in laboratory medicine plus their combined 50 years in clinical practice, Labrix founders were well positioned to achieve their goal. In a few short years, Labrix has become recognized for setting a new standard for in accuracy, reliability, and turnaround time in the testing of salivary hormone and urinary neurotransmitters. Building on their clinical experiences, both Dr. Mead and Dr. Lommen are recognized speakers in their field, presenting frequently at medical conferences where they combine a deep clinical knowledge with a passion for sound and scientific clinical practices.

**Salivary Hormone and HPA Axis/Adrenal Function Panels: Options for Testing**

<table>
<thead>
<tr>
<th></th>
<th>Comprehensive Plus Panel</th>
<th>Comprehensive Hormone Panel</th>
<th>Short Comp. Panel</th>
<th>Basic Hormone Panel</th>
<th>Adrenal Function Panel</th>
<th>Diurnal Cortisol Panel</th>
<th>Melatonin Panel</th>
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Urinary neuro-biogenic amine profiles provide insight into a patient’s overall ability to synthesize and metabolize neurotransmitters. Neurotransmitters, or “neuro-biogenic amines,” are secreted from pre-synaptic neurons into the synapse between nerve cells to stimulate receptors on post-synaptic neurons. These chemical messengers regulate many physical and emotional processes including movement, stress response, cognition, emotions, energy, cravings, pain and more. Doctor’s Data’s Neuro-Biogenic Amine profiles help identify alterations in urinary neurotransmitter status which may be associated with a variety of conditions from metabolic to behavioral disorders.

**Value in Clinical Practice**

Analysis of neurotransmitters and their metabolites provides a non-invasive assessment of neuro-biogenic amine status. A review of current scientific literature indicates that neurotransmitter testing may be useful in a variety of areas:

- **Identification of Imbalances** - Research indicates that urinary neurotransmitter levels may correlate with conditions such as depression and PTSD. Further clinical associations have also been made with imbalances in neurotransmitters and:
  - Other mood disorders
  - HPA axis (adrenal) dysfunction: fatigue, insomnia
  - Loss of mental focus: ADD, ADHD, cognitive concerns
  - Cravings, addiction and dependency
  - Hormonal imbalances: estrogen dominance (progesterone insufficiency), estrogen deficiency, androgen imbalance
  - Loss of appetite control: obesity and insulin resistance

- **Functional Testing** - Neuro-biogenic amine metabolism is mediated by catechol-O-methyltransferase (COMT), monoamine oxidase (MAO), and other enzymes. Test results may provide functional information about these important enzymes.

- **Response to Therapy** - Neuro-biogenic amines (serotonin, for example) may be altered by the addition of precursor amino acids such as 5-hydroxytryptophan (5-HTP). These changes may be apparent in the urine.

- **Toxicology Risk Assessment** - Changes in urinary serotonin, dopamine, and glutamate levels may be clinically relevant outcomes for neurobehavioral toxicology resulting from chemical or environmental exposures.
Which Profile to Order

The Basic Neuro-Biogenic Amine Profile offers a broad brush-stroke assessment which covers most clinical needs and which many providers find highly clinically relevant and useful. The Comprehensive Profile includes additional catecholamine metabolites and metanephrines, providing an expanded functional enzyme assessment and the most comprehensive profile available.

Basic Neuro-Biogenic Amine Profile:

- Serotonin
- GABA
- Dopamine
- Norepinephrine
- Epinephrine
- Glutamate
- Histamine
- Glycine
- PEA (Phenethylamine)

Comprehensive Neuro-Biogenic Amine Panel:

- Serotonin
- GABA
- Dopamine
- Norepinephrine
- Epinephrine
- Glutamate
- Histamine
- PEA (Phenethylamine)
- 5-HIAA (5-Hydroxyindolacetic acid)
- Glycine
- Taurine
- Tryptamine
- Tyramine
- Tyrosine
- DOPAC (3,4 Dihydroxyphenylacetic acid)
- 3-MT (3-Methoxytyramine)
- Metanephrine Fractionation (Metanephrine, Normetanephrine)
- Creatinine

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Thyroid Profile

The analysis of thyroid hormones and auto-antibodies together may improve the accuracy diagnosis and clinical success. The American Thyroid Association estimates that approximately 20 million Americans have thyroid disease, and approximately 60% of those with thyroid disease are unaware of their condition. Many patients with thyroid disorders may remain undiagnosed in many patients with asymptomatic or non-specific clinical presentations. The recognition of auto-immunity as a leading cause of thyroid dysfunction has led to the evaluation of auto-antibodies in thyroid testing.

Measuring only thyroid stimulating hormone (TSH) may be misleading in a variety of circumstances, including the recent treatment of thyrotoxicosis, pituitary disease, non-thyroid illness, thyroid hormone resistance or rare, TSH-secreting tumors. Under these circumstances, and in many other cases, the evaluation of thyroid hormones and thyroid antibodies may clarify the diagnosis of thyroid conditions and improve clinical success.

The Thyroid Profile is Useful for:

- Hypothyroid Conditions
- Hyperthyroid Conditions
- Autoimmune Conditions
- Arrhythmia
- Infertility
- Cholesterol Disorders
- Fatigue
- Pituitary Disorders

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The Metabolomic Profile provides assessment of the likelihood of metabolic syndrome in at-risk patients. The Metabolomic Profile evaluates biomarkers that may reflect a patient’s risk of developing metabolic syndrome, which is identified by a cluster of cardiometabolic risk factors, with inflammation, insulin resistance and adiposity as its central features. Identification of individuals with metabolic syndrome is important due to its association with an increased risk of and progression to type 2 diabetes mellitus and coronary heart disease.

**Hemoglobin A1c (HbA1c)** – estimates the average blood glucose concentration for the life of the red blood cell (120 days.)

**Insulin** – levels of insulin elevate early in type II diabetes, and then decrease as pancreatic beta cells lose function.

**High sensitivity C – Reactive Protein (hs-CRP)** – biomarker of moderate chronic inflammation that is associated with metabolic syndrome and CVD.

**Leptin** – leptin is a hormone that normally provides a satiety signal to the hypothalamus, stimulates thermogenesis, increases fatty acid oxidation and decreases blood glucose. However, elevated levels of leptin result from obesity-induced inflammation that causes leptin resistance. High levels of this adipokine induce pro-inflammatory effects that are associated with increased risk of metabolic syndrome, diabetes type 2 and CVD.

**Adiponectin** – is an anti-inflammatory adipokine that improves insulin sensitivity and stimulates fatty acid oxidation. Low levels of adiponectin are associated with metabolic syndrome, type 2 diabetes, obesity and sleep apnea-induced hypoxia, oxidative stress, and increased risk for CVD and some cancers.

**Leptin to Adiponectin ratio** – The ratio of the opposing adipokines, leptin to adiponectin, provides a more clinically sensitive indication of risk for metabolic syndrome, type 2 diabetes and CVD than does either adipokine alone. The predictive power of the ratio is further enhanced when a high ratio is associated with elevated CRP.

Except for obesity, the diseases that may develop from metabolic syndrome may not be overtly expressed until they are well advanced. Therefore early detection of the risk factors is very important.

**Patients that may especially benefit from the Metabolomic Profile include those with:**

- Increased waist-to-hip ratio or body mass index (BMI) >30
- High triglycerides or need for cholesterol medication
- Low HDL cholesterol or need for cholesterol medication
- Hypertension or need for hypertension medication
- Fasting Glucose > 100 mg/dL
- Family or personal history of cardiovascular disease, high cholesterol or type II diabetes
- Personal history of chronic inflammatory disease
About Doctor’s Data

Doctor’s Data, Inc. has provided innovative specialty testing to healthcare practitioners around the world from our advanced, CLIA-licensed clinical laboratory since 1972.

A specialist and pioneer in essential and toxic elemental testing, the laboratory provides a wide array of functional testing to aid in decision making and better patient outcomes. Choose DDI to help you assess and treat heavy metal burden, nutritional deficiencies, gastrointestinal function, hormone and HPA/adrenal function status, cardiovascular risk, liver and metabolic abnormalities, and more.

Our Mission:

• To research, develop and offer innovative specialty tests that help doctors identify health risks and improve outcomes for patients with chronic conditions.
• To educate and support healthcare professionals.
• To improve lives through science.