

# Hormone Testing



## Understanding Hormones for Health & Wellness

Hormones are released directly into the bloodstream by a complex and interactive network called the endocrine system. The foundation of hormonal balance relies on four key organs the thyroid, adrenal, ovaries and testes. These cornerstone organs work together, as well as individually, to secrete cortisol, testosterone, progesterone, estradiol, and Dehydroepiandrosterone (DHEA). On a whole these hormones not only influence our overall health and wellness their levels also influence and impact each other.

A hormone imbalance can occur when one or more of the cornerstone organs start secreting more or less of a given hormone. Understanding and also maintaining the proper balance of cortisol, testosterone, progesterone, estrogen, and DHEA plays an integral role for individuals looking to maintain an overall normal healthy state of wellbeing and for those seeking to optimize performance and functionality. Hormone levels are influenced by many factors, including stress, lifestyle choices, aging, medical conditions, medications, and hormonal therapies.

Monitoring and optimizing these hormones is key to achieving and maintaining physical and mental well-being, as imbalances can lead to a range of health issues and hinder overall quality of life.

## Saliva Testing Strengths

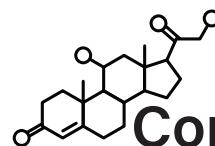
Saliva, as a diagnostic biofluid, has been labeled the 'mirror of the body' for how it can reflect the health and disease processes inside.<sup>2</sup> In an endocrine work up, saliva offers several distinct advantages over serum and other testing methodologies.

Serum testing typically measures the carrier or protein-bound version of hormones that are traveling through the blood. Saliva measures biologically available (free) hormones.

While both free and bound hormones can enter tissues, only unbound or free hormones can exert actions on target cells. It is the combination of free hormones as well as loosely bound hormones (which can rapidly become unbound or free in tissue capillaries) that are collectively termed "bioavailable hormones"<sup>3</sup>

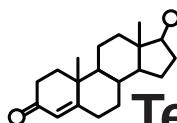
The primary benefit of salivary testing is that steroid hormones collected from saliva are what is bioavailable rather than the total, or protein bound, hormones measured in serum.<sup>3,4</sup> Cortisol, testosterone, estrogen, progesterone, and DHEA are steroid hormones.

As changing physiological conditions affect levels of binding proteins, measurements of bioavailable hormones are thought to reflect hormone activity more accurately in many clinical situations. Due to this unique feature, saliva hormone testing has been well established to deliver reliability and accuracy in many clinical scenarios.<sup>1,2,4</sup>



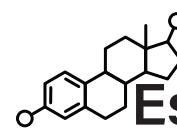
### Cortisol

Known as the stress hormone, influences our body's response to stress and helps regulate metabolism.



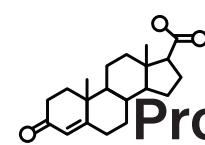
### Testosterone

Crucial for both men and women, contributes to muscle mass, bone density, sex drive, and overall vitality.



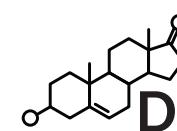
### Estrogen

Impacts metabolism, menstrual cycles, pregnancy, mood, bone health, and sexual wellness.



### Progesterone

Plays a vital role in the female reproductive cycle preparing the uterine lining, supporting the early stages of gestation, and plays secondary role in balancing other hormones and in metabolism.



### DHEA

Serves as a precursor to male and female hormones, influencing overall hormonal balance.

Convenient and painless collection	Can be used to measure baseline levels of sex hormones	Can be used to measure bioavailable hormone	Can be used to measure cortisol & HPA axis dysregulation*	Can be used to monitor various methods of HRT
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## Symptoms Associated With Hormonal Imbalance (List not all inclusive)

	Male-High	Male-Low	Female-High	Female-Low
Cortisol	weight gain and rounding of the face; acne; easy bruising; muscle weakness; severe fatigue; brain fog; irritability; headache	anxiety; Fatigue, particularly in the am; depression; lack of ability to cope with stress; food cravings; increased susceptibility to infection	weight gain and rounding of the face; acne; easy bruising; muscle weakness; severe fatigue; brain fog; irritability; headache	anxiety; fatigue, particularly in the am; depression; lack of ability to cope with stress; food cravings; increased susceptibility to infection
Testosterone	aggressive behavior; excess body hair; acne; headaches; high blood pressure; high sex drive	reduced sex drive; erectile dysfunction; loss of body hair; lean muscle wasting; fatigue; depression; weight gain	excessive facial and body hair; acne; mood swings; small breasts; loss of sex drive; infertility; obesity	fatigue; loss of strength and muscle tone; Irregular menstrual cycle; depression; loss of body hair; reduced sex drive
Progesterone <sup>1,2</sup>	depression, fatigue, heart disease; decreased sperm count	depression; mood swings; anxiety; low sex drive; erectile dysfunction	anxiety; bloating; depression; reduced sex drive; weight loss or gain; breast tenderness and swelling	Irregular menstrual cycle; spotting; headaches; infertility
Estrogen	sperm levels, motility and quality are affected; erectile dysfunction; weight gain; depression; fatigue; breast enlargement	depression; mood swings; anxiety; low sex drive; erectile dysfunction	polyps; fibroids; endometriosis; ovarian, breast and uterine cancer; heart disease; dementia; insulin resistance	brain fog; mood swings; hot flashes; night sweats; irregular or no periods; osteoporosis; tender breasts; weight gain
DHEA <sup>3</sup>	excessive hair growth; hair loss; aggressive behaviors; irritability; trouble sleeping; acne	depression; sexual dysfunction; heart disease; obesity; osteoporosis	excessive hair growth; hair loss; aggressive behaviors; irritability; trouble sleeping; acne	depression; sexual dysfunction; heart disease; obesity; osteoporosis

1. Progesterone increases the levels of estrogen in males
2. Levels fluctuate with the menstrual cycle and pregnancy
3. DHEA is the building block of other hormones. DHEA imbalance is associated with adrenal hyperplasia and adrenal tumors. Symptoms of dysfunction of the adrenals include unexplained weight loss; nausea and vomiting; dizziness; craving for salt

\*The hypothalamic-pituitary-adrenal (HPA) axis is a hormone system that regulates the body's response to stress. It consists of the hypothalamus, pituitary gland, and adrenal glands, which release hormones that control digestion, mood, and energy levels. HPA axis dysregulation can occur due to chronic stress or psychiatric disorders.