

THE DIAGNOSTIC DOWNLOAD



DHEA-Sulfate

Supports Hormonal Balance, Stress Resilience, and Healthy Aging

What is DHEA-S (Dehydroepiandrosterone Sulfate)?

DHEA-S is the sulfated form of DHEA, mainly produced by the adrenal glands and to a lesser extent by the brain, ovaries, and testes. As the most abundant steroid in circulation, DHEA-S serves as a stable reservoir for DHEA and a precursor to sex hormones like testosterone and estrogen. It also influences neurotransmitter synthesis, immune function, metabolism, and reproductive health, adapting to the body's demands through reversible conversion with DHEA.

Why Test for DHEA-S?

Assessing DHEA-S levels provides meaningful insights into multiple systems:

- **Adrenal Function and HPA Axis Status:** DHEA-S reflects adrenal output and HPA axis integrity. Low levels often indicate chronic stress, adrenal fatigue, or aging.
- **Hormonal Balance and Androgen Activity:** As a sex hormone precursor, DHEA-S influences libido, fertility, and mood. Imbalances can cause hormonal symptoms in both sexes.
- **Aging and Metabolic Health:** Levels decline steadily with age and often correlate with reduced vitality, muscle mass, cognition, and immune resilience.
- **Mood and Cognitive Health:** DHEA-S supports neurotransmitter balance, contributing to mood stability, stress resilience, and neuroprotection.
- **Androgen Excess in Women (e.g., PCOS):** Elevated DHEA-S may point to adrenal-driven androgen excess, aiding in evaluation of acne, hirsutism, and irregular cycles.
- **Sex Hormone Precursor Role:** DHEA-S fuels androgen and estrogen production, impacting menstrual health, libido, and reproductive function.
- **Immune and Inflammatory Regulation:** It helps regulate immune responses and inflammation, particularly in the context of chronic illness, aging, or immune suppression.



Clinical Significance of DHEA-S Levels

- **Low DHEA-S Levels:** May reflect adrenal hypofunction, chronic stress, or age-related decline. Clinical signs include fatigue, poor concentration, low libido, and depressive mood. Chronically, low DHEA-S may increase the risks of sarcopenia, osteoporosis, and insulin resistance.
- **High DHEA-S Levels:** May result from adrenal overactivity, PCOS, or androgen-secreting tumors. In women, elevated DHEA-S can cause hirsutism, acne, or menstrual irregularity. Supraphysiologic levels can also occur with DHEA supplementation due to hepatic conversion of oral DHEA into DHEA-S.

Actionable Insights

DHEA (unbound) and DHEA-S (sulfated) are **not interchangeable**. DHEA-S is **measured in $\mu\text{g}/\text{dL}$** , whereas DHEA is reported in ng/dL , and is a robust, long-acting indicator of adrenal and hormonal status. It is preferred in wellness screening, anti-aging protocols, and HPA axis evaluation due to its stability and wide physiological impact. In contrast, DHEA testing is reserved for acute or specialty cases involving suspected androgen excess.

Optimal Ranges: From a functional health perspective, optimal DHEA-S levels are those in the upper third of the reference range for healthy young adults aged 20–30, when levels naturally peak, and are associated with the best functional outcomes. Men generally have higher levels of DHEA-S.

- **Men: 450–550 $\mu\text{g}/\text{dL}$ ***
- **Women: 200–400 $\mu\text{g}/\text{dL}$ ***

**Functional ranges may differ depending on clinical goals and patient history.*

When supplementing with oral DHEA, expect most of it to convert in the liver to DHEA-S. Salivary hormone tests typically reflect free DHEA, not DHEA-S.