

Dehydroepiandrosterone Sulfate (DHEA-S)

MDL Test Number: 631

Methodology: Immunoassay

CPT Codes: 82627 x 1



Specimen Collection Platform:

Serum in Serum Separator Tube (SST)

Turnaround Time:

24 - 72 hours

Stability:

Room temperature

Test Additions*:

30 days to add tests

Specimen Collection:



1. Immediately after blood collection, invert the tube(s) gently 5 times to ensure mixing of clot activator.



2. Allow the tube to rest upright for at least 30 minutes after collection to ensure proper clotting.



3. Centrifuge for at least 15 minutes at 2200-2500 RPM within one hour of collection.



4. Do not remove the stopper or pour off serum.



What is DHEA-Sulfate (DHEA-S)?

Dehydroepiandrosterone sulfate, (DHEA-S), is a steroid hormone made almost entirely by the adrenal glands, two small glands that sit on top of the kidneys. The ovaries do not make it. On its own, DHEA-S is only weakly androgenic, that is, it has only a weak

male-type hormone effect, but the body converts it into stronger androgens such as androstenedione and testosterone. A high DHEA-S can therefore drive symptoms of androgen excess even though the hormone itself is weak.

DHEA-S is unusually steady. It does not rise and fall through the day the way cortisol does, it does not change with the menstrual cycle, and it does not travel attached to the carrier protein that testosterone uses, so it is not affected by anything that shifts that protein. Its half-life is close to a full day. What does change it is age: levels climb from about age seven, peak in the twenties, and then fall steadily from the thirties onward. That combination, steady hour to hour, but age-dependent, is why the sample can be drawn at any time, and why a result is best read against the patient's age.

Why test for DHEA-Sulfate (DHEA-S)?

A healthcare provider may order a DHEA-S test to find out whether the adrenal glands are the source of excess male-type hormone. Common reasons include:

- **Working up unwanted hair growth in a male pattern (hirsutism), thinning scalp hair, or persistent acne in a woman.** DHEA-S is often measured together with testosterone as a first screen.
- **Evaluating polycystic ovary syndrome, also called polyendocrine metabolic ovarian syndrome (PMOS/PCOS).** A raised DHEA-S is common and shows that the adrenal glands are contributing to the androgen excess.
- **Separating an adrenal source of androgen excess from an ovarian one.** Because DHEA-S comes almost entirely from the adrenal glands, it stays in the normal range when the ovary is the source.
- **Looking into non-classic congenital adrenal hyperplasia,** an inherited enzyme problem that shows up in adult women as androgen excess and is a standard part of the hirsutism and PCOS/PMOS workup.
- **Following up a markedly high result,** which in a woman raises the question of an androgen-producing adrenal tumor and usually leads to imaging.
- **Assessing adrenal function alongside cortisol when the adrenal glands are suspected of being underactive.**



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Special Instructions:

- **Timing of the draw:** No special timing is needed. DHEA-S does not follow a daily rhythm and does not vary across the menstrual cycle, so the sample can be drawn at any time of day and on any cycle day. Fasting is not required.
- **Hormonal contraceptives and pregnancy:** Both lower DHEA-S by a moderate amount. A result drawn on a combined pill, patch, or ring, or during pregnancy, can therefore understate how much androgen the adrenal glands are actually producing. Note either on the requisition so the result is read in that light.
- **DHEA supplements:** Over-the-counter DHEA is widely sold, and the body converts it to DHEA-S, so a patient taking it will have a raised result that reflects the supplement rather than adrenal output. Ask specifically, since patients often do not think of supplements as medication.
- **Steroid treatment:** Glucocorticoid medication suppresses the adrenal signal that drives DHEA-S, so a patient taking steroids may have a low result. List any steroid the patient takes, including creams, inhalers, and joint injections.
- **Biotin supplements:** Biotin (vitamin B7) is found in many over-the-counter hair, skin, and nail supplements, and at high enough levels it can interfere with this test. The manufacturer has not published how long a patient should stop it before the draw, so patients should disclose biotin use and let the ordering provider decide on timing.
- **Comparing results over time:** Different laboratories and instruments can produce somewhat different DHEA-S numbers from the same sample. When results are being tracked over time, use the same test at the same laboratory each time so the comparison is meaningful.

Limitations:

Every laboratory test has limits. For DHEA-S, the main ones are:

- This test measures from 15 to 1000 µg/dL. Results below that point are reported as less than 15 µg/dL rather than as an exact number, which matters most when the question is whether the adrenal glands are underactive. Very high results are diluted and re-run.
- A raised DHEA-S does not by itself identify a cause. Mild to moderate elevations are common in PCOS/PMOS and in non-classic congenital adrenal hyperplasia, while a markedly high value points toward an adrenal tumor. It is the size of the elevation, together with the rest of the workup, that separates them.
- Because DHEA-S falls steadily with age, a value that is ordinary for a woman in her twenties can be unexpectedly high for a woman in her sixties. The ranges below span a wide age band, so age has to be part of the interpretation.
- A small number of patients carry natural antibodies in their blood — often people who work closely with animals or who have received certain antibody-based treatments — that can interfere with the test and produce an unexpected result.
- A DHEA-S result is one piece of a larger picture. It is meant to be read together with the patient's symptoms, medical history, and other test results — never on its own.

Reference Range(s):

DHEA-S is measured in micrograms per deciliter (µg/dL). The ranges below cover healthy adults across a wide age span, and a healthy person's own level drifts down through that span with age:

- **Adult female: 35–430 µg/dL**
- **Adult male: 80–560 µg/dL**

A result outside these ranges is not automatically a problem, and a result inside them does not rule one out. Only the ordering provider can interpret what a given number means for a given patient. Patients should always go by the reference range printed on their own laboratory report.

Analyte	Disorder	Expected Value*
DHEA-S	PCOS / PMOS	↑
DHEA-S	Non-classic adrenal hyperplasia	↑
DHEA-S	Androgen-secreting adrenal tumor	↑↑
DHEA-S	Primary adrenal insufficiency	↓
DHEA-S	Postmenopause	↓

*↓ – Decreased, ↑ – Increased, ↑↑ – Markedly Increased.

What are some references that discuss the medical necessity of testing DHEA-Sulfate (DHEA-S)?

1. Teede HJ, et al. Recommendations from the 2023 International Evidence-based Guideline for the Assessment and Management of Polycystic Ovary Syndrome. *J Clin Endocrinol Metab*, **108**, 2447–2469 (2023).
2. Martin KA, et al. Evaluation and treatment of hirsutism in premenopausal women: an Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab*, **103**, 1233–1257 (2018).
3. Speiser PW, et al. Congenital adrenal hyperplasia due to steroid 21-hydroxylase deficiency: an Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab*, **103**, 4043–4088 (2018).
4. Hirschberg AL. Approach to investigation of hyperandrogenism in a postmenopausal woman. *J Clin Endocrinol Metab*, **108**, 1243–1253 (2023).
5. Bornstein SR, et al. Diagnosis and treatment of primary adrenal insufficiency: an Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab*, **101**, 364–389 (2016).
6. Davison SL, et al. Androgen levels in adult females: changes with age, menopause, and oophorectomy. *J Clin Endocrinol Metab*, **90**, 3847–3853 (2005).



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