

Androstenedione

MDL Test Number: 621

Methodology: Immunoassay

CPT Codes: 82157 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 Androstenedione?

Androstenedione is a steroid hormone that the body uses as a building block. It is made in the ovaries and in the adrenal glands — two small glands that sit on top of the kidneys — and the body converts it into testosterone and into estrone, a form of estrogen. On its

own, it is only weakly active; most of what it does, it does after being converted.

Because both the ovaries and the adrenal glands make it, androstenedione reflects androgen — male hormone — production from the two sources together. Levels are not steady. They run highest in the early morning and lowest late at night, roughly double around the middle of the menstrual cycle, rise during pregnancy, and decline gradually from about the third decade of life. Hard exercise raises them for a short time. This is why when the sample is drawn matters as much as the number itself.

Why test for Androstenedione?

A provider may order androstenedione to measure androgen production from the ovaries and the adrenal glands together. Common reasons include:

- **Unwanted hair growth in a male pattern (hirsutism), stubborn acne, or thinning scalp hair in women.**
- **Evaluating polycystic ovary syndrome, also called polyendocrine metabolic ovarian syndrome (PMOS/PCOS),** where androstenedione is often raised.
- **Screening for non-classic congenital adrenal hyperplasia (nonclassical CAH),** an adrenal enzyme disorder that can first show up in adulthood as androgen excess.
- **Signs of rapid or severe androgen excess** — a deepening voice, increased muscle bulk, or male-pattern balding — which can point to a hormone-producing tumor of the ovary or adrenal gland.
- **Working out where excess androgen is coming from,** since androstenedione is read alongside total testosterone and DHEA-sulfate.
- **Following treatment meant to lower androgen production,** such as combined hormonal contraception or steroid medication.



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Special Instructions:

- **Spironolactone:** Spironolactone cross-reacts with this test and makes results read falsely high. The manufacturer does not recommend this test for patients taking it. Note the medication on the requisition.
- **Collection timing and activity:** Androstenedione is highest in the early morning and lowest late at night, and roughly doubles around the middle of the menstrual cycle. Draw in the morning, and where the cycle matters, in the first half of the cycle. Hard exercise raises levels for a short time, so avoid drawing straight after a workout. Note the time of the draw and the cycle day.
- **Hormonal contraceptives:** Combined pills, patches, and rings lower ovarian androgen production, so a patient with real androgen excess can return a normal or low result while taking them. Note the method on the requisition. Current guidance is to stop combined hormonal contraception for at least three months before androgen excess is assessed from blood work.
- **When very low levels are expected:** This test is designed for the range typically seen in adult women. Its lowest reportable value is 0.3 ng/mL; results below that point are reported as less than 0.3 ng/mL. Levels in women taking steroid medication or combined hormonal contraception, and in women after menopause, often fall below this point.
- **Sample quality:** Serum is required. EDTA and heparinized plasma are not acceptable for this test. Let the sample clot completely before spinning it, particularly for patients on blood thinners, since leftover fibrin causes errors.
- **Comparing results over time:** Different laboratories and different instruments can produce somewhat different androstenedione numbers from the same sample. When results are tracked over time, use the same test at the same laboratory each time.

Limitations:

Every laboratory test has limits. For androstenedione, the main ones are:

- This test is an immunoassay, and its lowest reportable value is 0.3 ng/mL. Androstenedione levels in women taking steroid medication or combined hormonal contraception, and in women after menopause, are often below this point, so those results are reported as less than 0.3 ng/mL rather than as an exact number.
- Closely related steroids such as adrenosterone or DHEA cross-react to a small degree and may contribute to the result, especially if they are abnormally elevated. The steroids that have been tested are not an exhaustive list.
- There are other factors that can raise or lower the result. For example, samples with broken-down red blood cells (hemolysis) or high bilirubin read falsely high, while samples with high triglycerides read low.
- 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.
- Androstenedione comes from both the ovaries and the adrenal glands, so a high result does not say which of the two is responsible. It is read together with the other androgens rather than on its own.
- An androstenedione 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):

Androstenedione is measured in nanograms per milliliter (ng/mL); the same result may also be reported in nanomoles per liter (nmol/L). Expected levels in adults are:

- **Adult female: 0.3 – 3.3 ng/mL (1.0 – 11.5 nmol/L)**
- **Adult male: 0.6 – 3.1 ng/mL (2.1 – 10.8 nmol/L)**

Samples drawn around the middle of the menstrual cycle can fall above the upper limit without indicating a problem, because production roughly doubles at that point. 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*
Androstenedione	PCOS/PMOS	↑
Androstenedione	Hirsutism and other androgen excess	↑
Androstenedione	Non-classic congenital adrenal hyperplasia	↑↑
Androstenedione	Androgen-secreting ovarian or adrenal tumor	↑↑
Androstenedione	Postmenopause (natural)	↓

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

What are some references that discuss the medical necessity of testing Androstenedione?

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. Practice Committee of the American Society for Reproductive Medicine. Current evaluation of amenorrhea: a committee opinion. *Fertil Steril*, **122**, 52–61 (2024).
5. Bulun SE, Babayev E. Physiology and pathology of the female reproductive axis. In *Williams Textbook of Endocrinology* 15th edn (eds Melmed, S. et al.) Ch. 15 (Elsevier, Philadelphia, 2025).



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