



## What is DHEA-S?

Dehydroepiandrosterone sulfate (DHEA-S) is the most abundant adrenal androgen, and is an excellent indicator of adrenal hormone production. Although DHEA-S itself only has weak hormonal activity, it can be metabolized into more active androgens (e.g. testosterone) and estrogens (e.g. estradiol). DHEA-S also has neurosteroid activity, meaning it can influence brain function (1).

## What are normal DHEA-S levels?

Plasma levels of DHEA-S are 5-10 times higher than cortisol levels, 100-500 times testosterone levels and 1,000-10,000 times higher than estradiol levels (2). Levels are higher in males and vary by age with low levels during early childhood. A marked increase begins around 6-8 years of age, with peak DHEA-S levels occurring at 20-30 years of age, followed by a gradual decrease until they can be as 80-90% lower by 80 years of age (3).

	Female (µg/dL)	Male (µg/dL)
18 – 30 years	45 – 380	125 – 619
31 – 50 years	12 – 379	5 – 532
51 – 60 years	30 – 260	20 – 413
61 – 83 years	30 – 260	10 – 285

\*Reference ranges are from Rifai N, Horvath AR, & Wittwer C. (2018). Tietz textbook of clinical chemistry and molecular diagnostics (Sixth edition.). St. Louis, Missouri: Elsevier.

## What are the signs of high DHEA-S?

Elevated DHEA-S can occur due to tumours of the adrenal gland, (both benign and malignant), enlargement of the adrenal gland (adrenal hyperplasia), or due to polycystic ovary syndrome in females. The symptoms associated with elevated DHEA-S can include early puberty in young boys, and an absence of menstruation, development of masculine features, acne, and excess hair in females (4). Often high DHEA-S does not cause any noticeable symptoms in adult men. Testosterone therapy is available for men with low testosterone levels, although often other changes, such as more physical exercise for overweight men, can increase testosterone levels.

## What are the signs of low DHEA-S?

DHEA-S levels naturally decrease with age, but abnormally low DHEA-S levels can also be due to adrenal dysfunction, such as occurs in Addison disease, when the body's own immune system damages the adrenal glands. Reduced DHEA-S is associated with decreased muscle size, decreased libido, chronic fatigue, and rapid aging. It is also increases the risk of diabetes, osteoporosis, and dementia (5).

# DHEA-S Information Sheet

## Where can I find more info?

Visit [www.genetrackdiagnostics.com](http://www.genetrackdiagnostics.com) for full test information, including specimen collection requirements

### CONTACT US:

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### NOTE:

This brochure is provided for general information purposes only. It is not intended to replace medical advice from a health professional.

### References:

- (1) Prough RA, Clark BJ, Klinge CM. (2016). Novel mechanisms for DHEA action. *J Mol Endocrinol.* 56 (3), R139-55.
- (2) Walter KHK. (2008). Plasma DHEA-S levels in adult men and women are 100-500 times higher than those of testosterone and 1000-10000 times higher than those of estradiol. *Cutaneous Manifestations of Endocrine Diseases.* Springer Science & Business Media.
- (3) Harris PE, Bouloux P-MG. (2014). *Endocrinology in Clinical Practice*, 2nd Ed. CRC Press.
- (4) Hoffman DI, Klove K, Lobo RA. (1984) The prevalence and significance of elevated dehydroepiandrosterone sulfate levels in anovulatory women. *Fertil Steril.* 42 (1), 76-81.
- (5) Hillen T, et al. (2000). DHEA-S plasma levels and incidence of Alzheimer's disease. *Biologic Psychiat.* 47 (2), 161-176.