

Dehydroepiandrosterone to support hormone synthesis

By David M. Brady, ND, DC, CCN, DACBN, IFMCP, FACN & Caitlin Higgins, MS, CNS, LDN

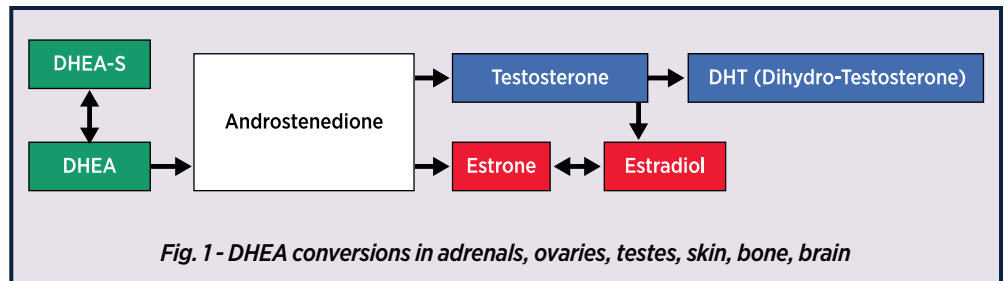
THIS INFORMATION IS PROVIDED AS A MEDICAL AND SCIENTIFIC EDUCATIONAL RESOURCE FOR THE USE OF PHYSICIANS AND OTHER LICENSED HEALTH CARE PRACTITIONERS ("PRACTITIONERS"). THIS INFORMATION IS INTENDED FOR PRACTITIONERS TO USE AS A BASIS FOR DETERMINING WHETHER TO RECOMMEND THESE PRODUCTS TO THEIR PATIENTS. ALL RECOMMENDATIONS REGARDING PROTOCOLS, DOSING, PRESCRIBING AND/OR USAGE INSTRUCTIONS SHOULD BE TAILORED TO THE INDIVIDUAL NEEDS OF THE PATIENT CONSIDERING THEIR MEDICAL HISTORY AND CONCOMITANT THERAPIES. THIS INFORMATION IS NOT INTENDED FOR USE BY CONSUMERS.

Dehydroepiandrosterone (DHEA) is required for the proper synthesis of important hormones and for modulating a series of biological processes that influences a variety of physiological responses such as healthy aging, sustained energy and vitality, a balanced stress response, enhanced mood, as well as muscle integrity and fat reduction. Designs for Health offers two doses of DHEA: 25 mg capsules, as well as 5 mg capsules that can be slowly titrated upwards as needed. Both are offered in a micronized form for increased absorption.

DHEA is a fat-soluble steroid hormone produced endogenously, primarily by the adrenal glands, and in smaller amounts in the ovaries/testes, the brain, and various other peripheral tissues such as the skin, liver, kidney, and bone.¹ It is a derivative of cholesterol metabolism as such:

Acetyl-CoA → Cholesterol → Pregnenolone → DHEA → DHEA-S

A great portion of DHEA in the body is derived from adrenal synthesis, which is controlled by adrenocorticotrophic hormone (ACTH) (a signal produced by the pituitary gland), and can be severely reduced when the stress hormone cortisol is high or due to treatment with corticosteroids.³ The adrenals secrete DHEA in the bloodstream, where it is converted back and forth to DHEA-sulfate (DHEA-S), which is considered the body's circulating reservoir of DHEA. Circulating DHEA is taken up by many tissues such as skin, bone, ovaries or testes and is converted to various estrogens and testosterone (which can be further converted to dihydrotestosterone [DHT] or estrogen). See **Figure 1**:



Serum levels of estrogens or testosterone are only a partial indicator of the DHEA hormone derivatives in the body. A significant amount of DHEA conversions occur inside ovaries, testes, brain and various peripheral cells such as skin and bone, and the resulting hormones are metabolized locally, intracellularly.² Conditions that may lower DHEA production include excessive mental or physical stress (usually characterized by increased cortisol levels), excessive alcohol consumption or misuse, extreme dieting, malnutrition and vegetarian diets, excessive consumption of soy products, and poor sleep quality. Drugs that may lower DHEA production include corticosteroids, insulin, and central nervous system agents.

DHEA plasma levels drop steadily with aging (up to 4% annually),⁴ which may be due to:

- lowered availability of the precursor pregnenolone (also declines with age)
- lowered ACTH secretion
- inadequate sensitivity of adrenals or other tissues that manufacture DHEA
- adrenal gland insufficiency and/or atrophy

Age-Related Effects

DHEA restores declining IGF-1 levels, corrects age-related changes in immune system, skin, bone, and muscle strength and sexual health.¹ In women, DHEA secretion begins declining around age 30, and becomes the only source of the sex steroid hormones after menopause, yet there is no feedback mechanism to increase DHEA secretion by the adrenals when serum concentrations decrease.² Exogenous DHEA has been shown to help compensate for this drastic postmenopausal decline to support intracellular estrogen and androgen production.² Moreover, DHEA has been shown to help reduce hot flashes, support vaginal tissue, enhance female libido, improve sexual function, and support bone health and an overall sense of well-being.^{2,4,5} DHEA supplementation significantly increased hip and trochanter bone mineral density, as well as insulin-like growth factor 1 in healthy women compared to the placebo group.⁶

DHEA may be beneficial for*:

- Weight management
- Stress support
- Mood support
- Sexual & reproductive health
- Menopause/perimenopause
- Age-related changes
- Healthy skin
- Healthy immune response
- Overall brain health
- Sustained energy

A meta-analysis of women with diminished or poor ovarian reserves shows DHEA supplementation improved outcomes of IVF/ICSI (increased numbers of retrieved oocytes, pregnancy rates, and live birth rates) compared to placebo.⁷

In men, higher endogenous levels of DHEA and testosterone were shown to be beneficially related to sexual health and buffer against age-related increases in erectile dysfunction (ED).⁸ DHEA helped with ED in males with comorbid hypertension; however, showed no positive effects on libido measures for men.⁴ DHEA enhances endothelial function via increasing nitric oxide (NO) production, dilating arteries, and blocks hypoxia-induced vasoconstriction.⁹

Brain & Cognitive Health

DHEA and DHEA-S are neurosteroids involved in many vital brain functions, including neuroplasticity, learning and memory facilitation, neuroprotection, cognition and behavior, and neurogenesis.¹⁰ A systematic review and meta-analysis showed that DHEA-S concentrations were significantly lower in patients with Alzheimer's disease (AD) compared with healthy controls.¹⁰ Evidence also supports that DHEA-S produces anti-inflammatory effects, which when decreased, may account for the increased oxidative stress, cognitive decline and immune system dysfunction seen in aging and in neurodegenerative diseases such as AD.¹⁰

Regarding mood and depressive disorders, a systematic review showed DHEA supplementation to significantly reduce depressive symptoms compared to placebo, indicating DHEA may be efficacious for depression and have beneficial effects on overall mood.^{4,11} Significant improvements in depressive symptoms related to the use of DHEA were also seen in patients with anorexia nervosa, HIV, adrenal insufficiency, and schizophrenia.¹² DHEA reduces the stress hormone cortisol and has shown to have neuroprotective effects in stress-related conditions and can directly lower corticosterone-induced nuclear translocation of stress-activated protein kinase-3, which is implicated in neuronal cell death.³

Weight Control and Cardiometabolic Health

DHEA stimulates fat metabolism, reduces abdominal fat storage; increases metabolic rate through the stimulation of thermogenesis and by supporting lean body mass. A systematic review and meta-analysis of 25 RCTs identified DHEA supplementation to significantly reduce total fat mass in elderly men.¹³ Studies show that lower DHEA and DHEA-S levels is associated with increased risk for atherosclerosis, heart failure, cardiovascular disease (CVD) and overall mortality.⁹ Furthermore, according to a meta-analysis, CVD patients with lower DHEA-S levels have poorer prognosis than those with higher levels.¹⁴ Because DHEA is involved in vascular smooth muscle relaxation and endothelial function, administration has been shown to improve insulin sensitivity, flow-mediated dilation of the brachial artery, and reduced plasminogen activator inhibitor type 1, confirming the anti-atherosclerotic actions of DHEA.⁹ In animal models of diabetes and obesity, DHEA and DHEA-S increased insulin sensitivity in adipose tissue, muscle, and liver, and increase pancreatic insulin secretion.¹⁵

Immune Function

DHEA helps support a normal immune response to infections and helps slow its age-related decline. DHEA enhances Th1 differentiation shifting the immune balance towards Th1 dominance, suppressing type 2 immune responses.¹⁶ Serum concentrations of DHEA are lower in patients with allergic diseases such as asthma and chronic urticaria leading researchers to hypothesize reduced DHEA levels may be associated with stress-induced exacerbation of allergic diseases.¹⁶

Conditions where DHEA may be contraindicated

PCOS (until excessive insulin and testosterone levels are corrected), hirsutism (excessive facial hair), acne, males with excessive estrogen levels, prostate enlargement, hormone-sensitive cancers (breast, prostate, adenomas). In premenopausal women, DHEA supplementation, when it is not deficient, may increase androgens to the point of interference with ovulation and fertility.

It is important to note that DHEA supplementation be monitored closely by your health care practitioner for baseline and subsequent levels of DHEA, testosterone, DHT, estradiol, and estrone via lab testing.

Warning: Do not use if pregnant, nursing, or planning to become pregnant.
If using any hormonal products, consult your health care practitioner before using DHEA.

Recommended Use: Take one capsule per day with a meal, or as directed by your health care practitioner.

For a list of references cited in this document, please visit:

<https://www.designsforhealth.com/api/library-assets/literature-reference---dhea-tech-sheet-references>

Dosing recommendations are given for typical use based on an average 150 pound healthy adult. Healthcare practitioners are encouraged to use clinical judgement with case-specific dosing based on intended goals, subject body weight, medical history, and concomitant medication and supplement usage.

***These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.**

To contact Designs for Health, please call us at (860) 623-6314, or visit us on the web at www.designsforhealth.com.

DHEA 5 mg

Supplement Facts

Serving Size 1 capsule

Amount Per Serving	% Daily Value
DHEA (Dehydroepiandrosterone)	5 mg *

*Daily Value not established.

Other Ingredients: Microcrystalline cellulose, cellulose (capsule), L-leucine.

DHEA 25 mg

Supplement Facts

Serving Size 1 capsule

Amount Per Serving	% Daily Value
DHEA (Dehydroepiandrosterone)	25 mg *

*Daily Value not established.

Other Ingredients: Microcrystalline cellulose, cellulose (capsule), L-leucine.