

Dehydroepiandrosterone

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Dehydroepiandrosterone (DHEA) remains a very controversial supplement. Some studies indicate that it may slow and reverse certain aspects of the aging process, and provide therapeutic value for a number of health conditions; other studies suggest it may promote the growth of latent breast, prostate and other cancers. Many patients ask our professional advice regarding the use of various supplements, including DHEA. As such, health practitioners should be aware of the research on this supplement and its potential effects on human health. The following is brief review of DHEA, outlining its synthesis, metabolism, effects on various health conditions, adverse side effects and key drug-nutrient interactions

General Features

DHEA is an intermediate steroid hormone produced mostly by the adrenal glands. All steroid hormones are derived from cholesterol. In the synthesis of adrenal androgen hormones, cholesterol is converted to pregnenolone and then to DHEA. From DHEA, the adrenal glands can synthesize androstenedione, which is further converted to testosterone. In fat tissue, androstenedione can be converted to estrone hormone by the aromatase enzyme, which also is known as estrogen synthase enzyme. Thus, DHEA supplementation can lead to increased production of androstenedione, testosterone and estrogen.

DHEA is the most abundant hormone made by the adrenal glands. Some DHEA is secreted by the adrenal glands and circulates in the bloodstream, where it is picked up by other tissues (i.e., adipose, testis, ovaries) and further converted into other androgens or estrogens. The serum concentration of DHEA (DHEA-sulfate), is used as a measure of adrenal androgen production when monitoring various conditions.¹

DHEA supplements can be made in the laboratory from diosgenin, a steroid compound found in wild yams. However, the body is unable to convert diosgenin into DHEA or any other hormone.

Thus, supplementing with wild yam as a means to affect hormone levels is unsubstantiated.²

In humans, DHEA blood levels peak in early adulthood and then start a lifelong descent. By the age of 70, DHEA levels have declined by up to 75 percent compared with young adult levels. By age 90, we make 90 percent less DHEA than a young adult.^{3,4}

These findings have led some researchers to investigate whether returning DHEA levels to those of a young adult (through supplementation) can serve as an anti-aging and degenerative disease prevention strategy. Preliminary reports in this regard are conflicting. Some evidence suggests DHEA supplementation (25-200 mg per day) can reverse some parameters of aging and improve well-being. Other reports correlate higher blood DHEA levels (and supplementation in some cases) with increased risk of prostate cancer, postmenopausal breast cancer and ovarian cancer.⁵⁻¹³

As a result, many health authorities are cautious about recommending DHEA supplementation as an anti-aging intervention. Individuals with a history or family history of breast, ovarian or prostate

cancer should not supplement with DHEA indiscriminately until further studies are completed.¹⁴ The average male produces 31 mg of DHEA per day, while the average woman produces approximately 19 mg.¹⁵

Supplementation Studies and Clinical Applications

Systemic Lupus Erythematosus (SLE): In a Stanford Medical Center study, DHEA supplementation (200 mg per day) decreased the SLE Disease Activity Index by nearly two points, while the placebo group increased by almost a full point. DHEA patients had significantly fewer flare-ups and their required dosage of corticosteroid drug used to control symptoms decreased by 35 percent, whereas the placebo group increased their dose of corticosteroids by 40 percent. This was a three-month study only. Long-term benefits are still unknown, and the major side effect in this study was mild to severe acne in women in the DHEA group.^{16,17}

Dementia (Age-Related): DHEA is found in high concentrations in the brain; declining levels with aging may affect memory and cognitive functions. DHEA supplementation shows promise in enhancing memory and improving cognitive function (men: 25-50 mg per day; women: 15-25 mg per day).^{18,19}

Erectile Dysfunction: A double-blind research study provided evidence that 50 mg of DHEA per day (six months) improved erectile function in men presenting with erectile dysfunction problems.²⁰ Be aware that other phytonutrients can correct erectile dysfunction and are known to have fewer potential side effects than DHEA (i.e., *Tribulus terrestris*, ginkgo biloba, muira puama).

Diabetes: Two short-term (three-week duration) studies have shown that DHEA supplementation increases insulin sensitivity at a daily dosage of 25-50 mg. There are no long-term human studies to indicate whether DHEA is appropriate for diabetics at this time.^{21,22}

Dosage Ranges

- Systemic Lupus Erythematosus: 100-200 mg per day for three months; maintenance dose unknown.
- Dementia: Men: 25-50 mg per day; women: 15-25 mg per day.
- Erectile Dysfunction: 50 mg per day.
- Diabetes: 25-50 mg per day, but requires substantiation.

Adverse Side Effects and Toxicity

At doses of 50-200 mg, patients often experience acne, increased facial hair and increased perspiration. Less frequently reported side effects are breast tenderness, weight gain, mood alteration, headache, oily skin and menstrual irregularity.²³

Contraindications

Any personal history or family history of breast, ovarian or prostate cancer (extreme caution should be used in these cases)¹⁴ precludes indiscriminate use of DHEA supplementation. Males taking DHEA should have their PSA (prostate-specific antigen) levels monitored to screen for prostate cancer development. Females taking DHEA should be monitored for breast, ovarian and endometrial cancer development.²⁶⁻³³

Drug-Nutrient Interactions

Methyltestosterone: DHEA supplementation has been shown to increase blood levels of testosterone, as does methyltestosterone. Thus, the addition of DHEA supplementation to methyltestosterone treatment may result in an excessive increase of blood testosterone and increase the risk of related side effects.^{24,25}

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