

*Vitality Research Institute*  
VITAL HORMONE REPORT

***Facilitates Anti-Aging, Enhances [Libido](#), Rejuvenates the Immune System, Prevents Heart Disease, Reduces Body Fat, Tames Stress, Restores Memory, Fights Cancer***

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Dehydroepiandrosterone (DHEA), the most abundant [hormone](#) found in the human body, is sometimes referred to as the "Anti-Aging Hormone." DHEA, like [HGH](#) and [melatonin](#), has shown to have broad anti-aging and anti-disease effects on the body, both indirectly and directly. [1] DHEA regulates the body's production and regulation of 18 other [steroid](#) hormones including sex hormones ([estrogen](#), [testosterone](#)), stress hormones (cortisol, norepinephrine), and DHEA plays a vital role in increasing lean muscle mass, burning fat, and stimulating bone growth. [2, 3] Certain cells in the body have DHEA-specific [receptors](#), which indicates that DHEA has direct effects on body tissue and physiology. [3]

The body's production of DHEA begins in the brain with the [pituitary](#) gland's secretion of adrenocorticotrophic hormone (ACTH), which travels through the bloodstream to the [adrenal](#) glands located atop the kidneys. ACTH signals the adrenal glands to convert cholesterol to DHEA, which is released into the bloodstream primarily as DHEA-sulfate (DHEAS). In addition to production in the adrenal cortex, DHEA is also synthesized in the brain and skin. [1]

DHEA was first discovered in 1934. In the early 1980s, DHEA was widely sold in health food stores, primarily as a weight-loss product. Until 1986, DHEA was a nonprescription drug, then the FDA reclassified it on the basis that the longer-term risks were unknown. [4] In October 1994, the U.S. Dietary Supplement Health and Education Act, among many other effects, changed the regulatory status of DHEA so that supplements could again be sold without a prescription. [5]

In the U.S.A., the value of a drug or therapeutic agent is determined by large-scale, [double-blind](#), placebo-based clinical studies, which are very expensive. Because DHEA

is a naturally occurring substance, it cannot be patented. Therefore, there is no incentive for pharmaceutical companies to invest millions of dollars on clinical trials to determine the effectiveness of DHEA in the treatment of specific diseases, in compliance with the requirements of the FDA for any drug. However, numerous researchers have conducted a wide range of relatively small-scale DHEA studies for many years, and the findings show great promise for the value of DHEA. Interestingly, pharmaceutical firms are reportedly testing synthetic forms of DHEA for their potential in treating [AIDS](#), lupus erythematosus, and [Alzheimer's](#). [6, 7]

DHEA is the focus of some of the most exciting research in medical science in this century. [8] In this report, a few important studies will be noted, but there are hundreds of others in the literature.

## Requirements

**R.D.A. Minimal Requirements.** The U.S. Government, through the National Research Council's Food and Nutrition Board, has not established a Recommended Dietary Allowances ([RDA](#)) for DHEA.

**Unique Needs.** Each individual's needs are different, depending on his or her goals, age, general health, pre-supplement DHEA levels, etc. The goal of most anti-aging and health promotion DHEA supplementation programs is to restore [circulating levels](#) of DHEA to those of a person approximately 20 to 30 years of age. Accordingly, the pre-supplementation levels of DHEA should be established. Several experts recommend having a physician periodically monitor the person's DHEA and DHEAS levels by means of a simple saliva test (at a cost of approximately \$40) or a blood test (at approximately \$60 to \$90). [9]

Unlike [HGH](#) and [melatonin](#), DHEA levels are relatively constant throughout the day, so there does not appear to be any advantage or disadvantage in dosing at a particular time of day, although one researcher recommends taking DHEA within an hour or two after rising in the morning. [10] Another recommendation is to divide the total DHEA daily dose into smaller doses taken three or four times daily. [1]

Taking too much DHEA can suspend the body's internal production, so one researcher recommends taking DHEA supplements on alternating days. [1] Another researcher recommends "[cycling](#)" DHEA with 4 weeks of supplementation, followed by 2 to 4 weeks without supplementation, before starting a new cycle. [5]

Information Source	Anti-Aging Programs	Physician-directed Pharmacology
<i>Brain Longevity</i> [11]	25 to 200 mg	

<i>Grow Young with HGH</i> [1]	25 to 150 mg	
<i>The Anti-Aging Hormones</i> [7]	20 to 100 mg	
<i>The DHEA Breakthrough</i> [9]	5 to 75 mg	
<i>HGH: The Promise of Eternal Youth</i> [3]	25 to 50 mg	
<i>DHEA: Fountain of Youth</i> [5]	5 to 50 mg	200 to 1,500 mg
<i>The Superhormone Promise</i> [8]		
-- Adults of normal health	50 mg	
-- Cancer patients (based on 150-lb. body weight)		up to 2,720 mg
<i>Smart Drugs and Nutrients</i> [12]		
-- Adults of normal health	50 mg and up	
-- Medical treatments		up to 2,000 mg
<i>Smart Drugs II</i> [13]		
-- Improve brain function and memory		up to 500 mg

**Signs of Deficiency.** DHEA deficiency is associated with increased vulnerability to various cancers (including breast, ovarian, prostate, and bladder), [atherosclerosis](#), [high blood pressure](#), [Parkinson's disease](#), [diabetes](#), nerve degeneration, and other age-related conditions. [1, 2]

**Food Sources.** The only natural food source for the [precursor](#) substance to DHEA is the extract of wild yams (diosgenin or discorea). [4, 14] Many researchers report that DHEA in plants (wild yam) exists only in a precursor form and that human bodies in general and older human bodies in particular cannot convert any plant extract into DHEA. [9, 10, 15]

[Chromium](#) picolinate supplements reportedly boost the body's DHEA production. [16]

**Forms.** DHEA is available in nonprescription pills and capsules, and higher-strength (fully formed DHEA) prescription pills and capsules. Most commercially available DHEA is produced in laboratories from substances such as diosgenin and discorea that are extracted from wild yams.

## Why People Take It

**Weight Loss.** In a 28-day study, DHEA therapy resulted in a group of men losing 31 percent of their mean body fat without changing their body weight. [2] The role of DHEA in weight loss may be related to the hormone's blocking of an [enzyme](#) known to produce fat tissue and promote cancer cell growth. [2] The same 31 percent loss of [body fat](#) without changing total body weight was observed in mice experiments conducted by DHEA research pioneer Arthur Schwartz, Ph.D., professor at Fels Institute for Cancer Research and Molecular Biology at Temple University School of Medicine. [1, 17]

DHEA suppresses the appetite, and particularly suppresses hunger for calorie-laden fats. [8] The anti-[obesity](#) effect of DHEA may be based on the hormone's inhibitory effect on the fat-producing enzyme glucose-6-dehydrogenase (G6DPH). Another effect of DHEA seems to be its stimulation of cholecystokinin (CCK), which signals the body to feel satiated as if having completed a full meal. [1]

**Immune System Enhancement.** DHEA appears to restore immune balance and stimulate monocyte production (the cells that attack tumors), B-cell activity (the cells that fight disease-causing organisms), T-cell mobilization (infection fighting T-cells have DHEA binding sites), and protection of the [thymus](#) gland (which produces T-cells). [3]

Research on mice conducted by Dr. Raymond Daynes, head of the division of cell biology and immunology at the University of Utah in Salt Lake City showed that DHEA rejuvenated immune function (proliferation of T-cells and IL cytokine 2), and increased the ability of older mice to make far better use of vaccines in fighting diseases such as hepatitis B, influenza, diphtheria, and tetanus. [1] Another study by Dr. Daynes demonstrated DHEA's ability to reverse ultra-violet (UV) damage to the immune systems of mice. [8] In another study, researchers at Kentucky University's Sanders-Brown Center for Aging significantly reversed the immune deficiency of mice having age-related declines in antibody response. [3]

**Cancer.** In laboratory animal studies, DHEA seems to protect against several cancers, including breast, liver, lung, colon, skin, prostate, testicular, and ovarian. [7] According to one study, 50 [milligrams](#) daily of DHEA for three weeks produced an increase in the natural killer cells, which are the body's primary defenders against cancer. [18] In small-scale studies, low levels of DHEA has been associated with gastric cancer, prostate cancer, and bladder cancer, but larger-scale studies are needed. [10]

**Brain Function.** Brain tissue contains 6.5 times the concentrations of DHEA than other tissue in the body. [1, 12] Studies indicate that DHEA administration improves memory and cognitive processing, acts as a [growth hormone](#) in helping neurons grow new dendrites, and controls levels of the stress hormone cortisol. [11] A study in a nursing home of 61 men between the ages of 57 to 104 years, found that lower levels of DHEA correlated with greater dependency and increased difficulty in conducting daily activities. [1]

**Mood and Sense of Well Being.** In a 1994 [double-blind](#), [controlled](#) study conducted by Dr. Arlene Morales, Samuel Yen, and their associates at the University of California School of Medicine in San Diego, 17 women and 13 men between the ages of 40 and 70 were divided into two groups: one received 50 milligrams of DHEA orally for 3 months and the other group received placebos. The group receiving the DHEA had significant results in that 82 percent of the women and 67 percent of the men reported an improved sense of well being, including better quality of sleep, increased energy, feeling more relaxed, and more capable of handling stress. [1, 8, 19] In another study, a group of middle-aged and elderly men taking DHEA for one year reportedly experienced a greater sense of well-being, improved ability to cope with [stress](#), increased mobility, reduced pain, and improved sleep. [2] Research by Owen M. Wolkowitz, MD and colleagues in the Department of Psychiatry at the University of California, San Francisco, determined that DHEA was effective in treating depression and that the improvement was dose related, with greater improvement noted for subjects taking larger doses of DHEA. [8, 20]

**Sex Drive.** Approximately 30 to 50 percent of total [androgens](#) in adult men are derived from DHEA. [3, 20] In women, an estimated 70 percent of [estrogens](#) before [menopause](#) and nearly 100 percent after menopause are derived from DHEA. [3]

**Impotence.** High levels of DHEA in men correlate with low incidence of impotence. [21]

**Menopause.** DHEA appears to offer many of the benefits of estrogen [replacement therapy](#) (ERT), but without the unwanted side effects. [8] Relevant research in this area was conducted by Dr. Pierre Diamond in a study at Le Centre Hospitalier de l'Universite Laval in Quebec City involving 20 postmenopausal women aged 60 to 70 years who were not receiving [estrogen](#) and who instead received DHEA in topical creams daily, with reported positive effects on [insulin](#) resistance, improved body mass indices, increased bone density, reduced [cholesterol](#), etc. [8] In Europe, DHEA has a long history of use as an a postmenopausal antidepressant. [8]

**Prevent [Osteoporosis](#).** DHEA is converted in the bone cells into a form of estrogen called estrone, which increases the cellular activity of osteoblasts that build bones. In addition, DHEA arrests osteoclasts, which are [free-radical](#)-activated entities that absorb bone and make it porous. [3]

**Heart Disease.** Some epidemiologic studies have found an association between low DHEA [serum](#) levels and heart disease. Researchers Elizabeth Barrett-Connor, MD and Deborah Goodman-Gruen, MD, Dept. of Family and Preventive Medicine, University of California, San Diego, School of Medicine studied natural DHEAS serum levels in 1,029 men and 942 women in a 19-year study. Their finding was a statistically significant reduced risk (to 85 percent) of death from cardiovascular disease in men with increased DHEA serum levels. [20] Studies conducted by David M. Herrington, MD, Division of Cardiology, Bowman Gray School of Medicine, Winston-Salem, NC, found that high

serum levels of DHEA play a role in preventing the development of coronary atherosclerosis. [20] A 1986 study reported in the *New England Journal of Medicine* involving 242 middle-aged and elderly men taking small doses of DHEA over a 12-year period showed an apparent correlation with 48 percent reduction in death from heart-disease and 36 percent reduction in death from other causes. [1, 3, 7]

**Diabetes.** Some researchers believe DHEA may protect against [adult-onset diabetes](#). In a 3-week randomized [double-blind](#), placebo-controlled trial of 15 post-menopausal women, Gordon W. Bates, Jr., MD, then at the Department of Obstetrics and Gynecology, University of Tennessee, Memphis, and colleagues at Baylor College of Medicine, Houston, found that the group of subjects receiving 50 mg of DHEA daily experienced significantly enhanced [insulin](#) sensitivity. [20]

**Lupus.** A study reported in the journal *Arthritis Rheum.* indicates that DHEA may help patients with systemic lupus erythematosus. [22]

**[Alzheimer's Disease](#).** DHEA is being studied for its potential value in treating Alzheimer's disease, particularly in the earliest stages to inhibit or prevent progression of the disease. Individuals with Alzheimer's have 48 percent less DHEA than matched [controls](#) of the same age, but it is not known if the low DHEA levels are a cause or an effect of Alzheimer's. [12] DHEAS may also play a role in blocking the neuro-destructive effects of gamma-aminobutyric acid ([GABA](#)), a naturally occurring brain [neurotransmitter](#) that is believed to be linked to Alzheimer's disease. [1]

## Anti-Aging Considerations

DHEA [replacement therapy](#) may be one of the most promising approaches to slow [aging](#) while reducing the risk of degenerative disease. [5] DHEA supplements have been shown to help prevent cancer, arterial disease, multiple sclerosis, and [Alzheimer's](#) disease; treat lupus and [osteoporosis](#); enhance the [immune system](#); and enhance memory. [1] In addition, DHEA is reported to rejuvenate virtually every organ system, restore energy, improve mood, increase sex drive, relieve [stress](#), reduce [body fat](#), and make the skin softer and hair shinier. [8] DHEA gives people the ability to take control of the aging process, and undo the damage inflicted by time. [8] One of the most commonly observed effects of taking DHEA is increased energy levels. [23]

Like other anti-aging [hormones](#), such as [HGH](#), DHEA is produced by the body in abundant supplies during youth, reaching a peak around age twenty-five, then falling to much lower levels in later life. In the youthful prime of life, men produce approximately 31 mg DHEA daily, and women produce approximately 19 mg. [5] Sixty-five-year-old people only have 10 to 20 percent as much [circulating](#) DHEA as 20 year olds. [1] Interestingly, only humans and primates show the endocrinological pattern of having very high prenatal serum levels of DHEA and DHEAS that drop to virtually none at birth, then rise again dramatically at puberty. [20] After peaking in the years of the mid-

twenties, the decline rate for DHEA and DHEAS is relatively constant at about 2 percent per year. Studies indicate that DHEA and DHEAS levels in young women are 10 to 30 percent lower than in young men, but with age these sex-based differences disappear as the levels of circulating DHEA and DHEAS drop. [20] In the bodies of the elderly, the DHEA levels drop to virtually none just before death. [8]

Stress causes a drop in DHEA levels, and some clinicians monitor DHEA levels to track long-term stress. [11] Alcohol consumption reduces DHEA levels. [5] Caffeine (from coffee, tea, sodas, chocolate, candy, medications, etc.) raises cortisol and lowers DHEA. [9]

Some of the reported benefits of DHEA may be related to DHEA's role in stimulating production of [HGH](#) and insulin-like growth factor ([IGF-1](#)). Some researchers express the opinion that while DHEA may slow some of the problems of aging, DHEA cannot reset the cellular clocks of aging, nor can it extend the maximum life span. [14, 24] According to DHEA pioneer researcher Dr. Samuel Yen, DHEA is "a drug that may help people age gracefully." [25]

## Safety Considerations

High doses of DHEA over long periods may suppress the body's natural ability to synthesize the hormone. [2]

Patients with kidney disease or multiple sclerosis have taken extremely high doses: 6 to 8 grams of DHEA daily, without adverse side effects. [7] Up to 1,600 mg of DHEA have been administered daily to subjects without side effects. [11] In early experiments, doses as high as 3,000 mg were administered. At extremely high doses over a longer period of time, some women temporarily experienced acne and increased expression of male attributes including facial hair growth and deepening of the voice. [11]

Animal studies have shown that DHEA at high doses can lead to liver enlargement and liver damage. [2, 4, 21] Some animal and epidemiologic studies suggest that higher serum levels of DHEA may be associated with increased risk for ovarian and perhaps prostate or other types of cancer.

Prostate and other cancer patients should consult their physician regarding DHEA supplementation.

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