

DHEA

Other names: dehydroepiandrosterone, dehydroepiandrosterone sulfate

Dehydroepiandrosterone (DHEA) is a steroid hormone that's produced by the adrenal glands. The body converts DHEA to male and female sex hormones, such as estrogen and testosterone.

DHEA levels typically peak by the time people are in their 20s and decline with age, which is why there has been considerable interest in DHEA and its role in aging. In fact, DHEA supplements have been touted as an anti-aging hormone because lower levels of DHEA have been reported in some people with type 2 diabetes, breast cancer, heart disease, osteoporosis, AIDS, adrenal insufficiency, kidney disease and anorexia. Certain medications may also deplete DHEA, such as corticosteroids, insulin, opiates and danazol.

DHEA is manufactured naturally in the body, but DHEA supplements can also be made in a laboratory from a substance called diosgenin, found in soybeans and wild yam. Wild yam cream and supplements are often promoted as being a natural source of DHEA, but the body can't convert wild yam to DHEA on its own -- the conversion must be done in a laboratory.

DHEA supplements were taken off the U.S. market in 1985 because of concerns about false claims regarding its benefits. It became available only by prescription but was reintroduced as a nutritional supplement after the Dietary Supplement Health and Education Act was passed in 1994.

Why Do People Use DHEA Supplements

DHEA is used as an "anti-aging" hormone and for conditions in which DHEA levels have been found to be low, however, there are very few large, well-designed human studies showing that it's effective.

- **Aging**

The gradual decline in the body's DHEA levels correlate with loss of muscle mass, decreased bone density, and a decline in immune function. A **study** by Mayo Clinic researchers, published in the *New England Journal of Medicine*, looked at the effect of DHEA supplements on markers of aging, such as muscle mass, muscle strength, fat mass, peak endurance and glucose tolerance in older men and women.

The study involved 87 men and 57 women. At the end of the two-year study, participants showed no significant change in any of the markers. It's one of the largest and longest studies on DHEA and human aging to date.

- **Depression**

Clinical trials examining the effect of DHEA for depression suggest that DHEA temporarily improves symptoms of depression compared to a **placebo**. For example, a study sponsored by the National Institute of Mental Health investigated the use of DHEA by 46 people between the ages of 40 and 65 with major or minor depression. They took DHEA for six weeks (90 mg a day for three weeks followed by 450 mg a day for three weeks) or a placebo.

Twenty three people improved while taking DHEA, compared to 13 who responded while taking the placebo. After six weeks, 14 out of 15 people taking the placebo were still depressed, compared to eight out of 14 people taking DHEA.

Studies on lasting mood changes, however, have had inconsistent results. More research is needed before DHEA should be used for depression, however, because the long-term effects aren't known.

- **Menopause**

One small study found that 25 mg a day of DHEA may reduce symptoms of menopause. Levels of other hormones were affected, however, which may have adverse effects.

- **Obesity**

In animal studies, DHEA has shown some promise in reducing genetic or diet-induced obesity. A study funded by the National Institutes of Health looked at the effect of DHEA (50 mg a day) compared to a placebo for weight loss in 56 overweight adults between the ages of 65 and 78. At the end of the six month study, people taking DHEA lost an average of two pounds compared to the people taking the placebo, who gained just over one pound.

Although overall weight loss was minimal, results were more promising when fat loss around the abdomen was assessed. After six months, women taking DHEA lost 10% of their abdominal fat and men lost 7%.

A large study involving 942 men in the Massachusetts Male Aging Study looked at men between the ages of 40 and 70, first in 1987 to 1989 and then again in 1995 to 1997. Researchers found that fat around the abdomen (called central obesity) was associated with lower DHEA levels.

Although these are promising preliminary results, until we have more research on the safety and effectiveness of DHEA, researchers recommend trying other, more proven methods for weight loss.

- **Osteoporosis**

Supplementation with DHEA has been studied to increase bone density. It is usually taken by mouth or applied as a cream to the inner thigh. DHEA hasn't been found to be helpful for younger women and men. Some evidence suggests it might be helpful for osteoporosis in older women. More research is needed.

- **Sexual Dysfunction**

Studies on the use of DHEA for erectile dysfunction in men and sexual function in men and women have been inconsistent. A one-year study involving 280 men and

women found that 50 mg a day of DHEA improved libido in women over 70 but not in younger women or men. Other studies have been mixed -- most have been too small to be meaningful or the treatment duration has been too short.

- **Systemic Lupus Erythematosus**

Scientific evidence indicates that DHEA may enhance mental function and increase bone mass in women with systemic lupus erythematosus (SLE), an autoimmune disease affecting connective tissue. In fact, synthetic DHEA called prasterone (Prestara) is under investigation for the treatment of this condition and the prevention of loss of bone mineral density. The FDA has granted orphan drug status for the prevention of loss of bone mineral density in SLE patients taking corticosteroids.

- **Adrenal Insufficiency**

Adrenal insufficiency is a condition involving low levels of adrenal gland hormones. Several studies suggest DHEA supplements may improve well-being, quality of life, and sex drive in people with adrenal insufficiency. In 2003, prasterone (Fidelin) received orphan drug status for adrenal insufficiency. Adrenal insufficiency can only be diagnosed by a doctor. It can be a medical emergency and should be properly diagnosed and treated by a qualified health professional.

- **Other Conditions** DHEA has also been explored for many other conditions, such as:

Alzheimer's disease
Chronic fatigue syndrome
Crohn's disease
Heart disease
Schizophrenia
Sjogren's syndrome

DHEA Side Effects and Safety

DHEA is a hormone, so it should only be used under the supervision of a qualified health practitioner. Pregnant or nursing women or children should not use DHEA. There have been no studies on the long-term safety of DHEA.

One of the more common side effects of DHEA supplements is acne. Other side effects include abdominal pain, hair loss, insomnia, nasal congestion, fatigue, oily skin, rapid or irregular heartbeats, or heart palpitations.

DHEA supplements may alter liver function, so people with liver disease shouldn't use DHEA. People with mood disorders such as depression should only use DHEA under the supervision of their health-care provider, as DHEA supplementation may worsen mood. High levels of the body's natural DHEA has been associated with psychotic disorders, so people with or at risk for psychotic disorders shouldn't use DHEA unless under the supervision of their health-care provider.

Since DHEA supplements may influence the production of male and female hormones, acne, greasy skin, facial hair growth, hair loss, weight gain around the waist, a deepening of the voice and other signs of masculinization may occur in women. Men may develop high blood

pressure, male pattern baldness, aggressiveness, breast enlargement (gynecomastia), breast tenderness and shrinkage of the testicles.

DHEA supplements may also affect the levels of other hormones, such as insulin and thyroid hormone, and affect cholesterol levels. People with diabetes or hyperglycemia, high cholesterol, thyroid disorders, Cushing's disease or other hormonal disorders should be particularly cautious.

DHEA supplements may alter the levels estrogen and testosterone, which can theoretically increase the risk of hormone-sensitive cancers such as breast, prostate and ovarian cancer. It's also not known whether DHEA supplements may inhibit the body's ability to make DHEA.

People taking DHEA supplements may be more likely to develop blood clots, so people with clotting disorders, heart disease and those with a history of stroke should avoid DHEA supplements.

Possible Drug Interactions

Theoretically, DHEA supplements may interfere with the effectiveness of antipsychotic drugs, such as chlorpromazine (Thorazine), fluphenazine (Prolixin) and prochlorperazine (Compazine).

DHEA supplements may increase the effects of the following medications:

- AZT (Zidovudine) -- HIV medication
- Barbiturates -- medications for sleep disorders
- Cisplatin -- cancer medication
- Estrogen and oral contraceptives
- Testosterone
- Benzodiazepines, such as triazolam (Halcion), alprazolam and diazepam for anxiety and sleeping disorders

DHEA may interact in unpredictable ways with the following drugs:

Corticosteroids, such as prednisone, beclomethasone (Beconase, Vancenase), dexamethasone, hydrocortisone, prescribed for inflammatory conditions such as arthritis, asthma and skin infections.

Insulin

Lithium

Prescription drugs that are broken down by the same liver enzymes, such as: allergy medication such as fexofenadine (Allegra), antifungal drugs such as itraconazole (Sporanox) and ketoconazole (Nizoral), cancer medications such as etoposide (VePesid), paclitaxel (Taxol), vinblastine, or vincristine, cholesterol medications, such as lovastatin, and oral contraceptives.

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