

Briefs

DHEA Dosing and Safety Precautions

Properly managed DHEA therapy can be useful for most older men and women to increase energy, vitality and to foster an overall youthful feeling. However, there are guidelines that should be followed for safe long-term use of DHEA.

When taking oral supplements of DHEA, it is important that antioxidants are available to the liver because DHEA can promote free radicals in liver cells. Animal studies have shown that extremely high doses (from 2000 to 10,000 mg DHEA daily in human terms) caused liver damage in mice and rats. When antioxidants were given along with the DHEA, liver damage did not occur despite the massive doses of DHEA being administered to these animals. It should be noted that the amount of DHEA shown to cause liver damage is 20 times more than is necessary to produce anti-aging benefits. Alpha lipoic acid, vitamin E and N-acetyl- cysteine (NAC) are antioxidants that have been shown to be especially effective in suppressing free radicals in the liver.

The Life Extension Foundation has evaluated thousands of DHEA blood tests to determine the ideal dose of DHEA for both men and women. The Foundation's findings indicate that the optimal dosage range for DHEA varies considerably among individuals. Prior recommendations to take DHEA three times a day are now being replaced with a general recommendation that men and women should consider taking a total of 15mg to 75 mg a day in one to three divided doses. Most human studies use a daily dose of 50 mg, and this is the typical daily dose the majority of people use to restore serum DHEA to youthful levels. DHEA can be taken with or without food, though some believe that fat helps DHEA to assimilate better. Some people absorb DHEA better by taking it 20 to 30 minutes before meals.



A DHEA-s blood test should be taken three to six weeks after beginning DHEA therapy to help determine optimal dosing. Some people neglect to test their blood levels of DHEA and wind up chronically taking the wrong dose. When having your blood tested for DHEA, blood should be drawn three to four hours after the last dose. DHEA testing can save you money if it shows that you can take less DHEA to maintain youthful DHEA serum levels.

The standard blood test to evaluate DHEA status is one that measures DHEA-s (sulfate). The DHEA-s is calculated in micrograms per deciliter (mcg/dL) of blood.

The youthful ranges of DHEA are as follows:	
Men	Women
400 to 560	350 to 430

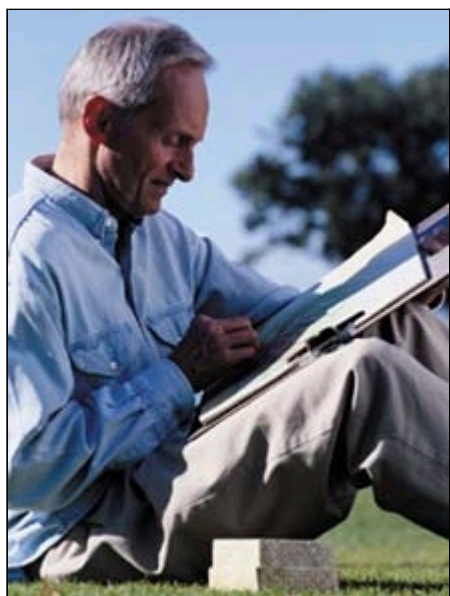
People over age 40 who do not supplement with DHEA usually have serum levels below 200, and many are way below 100. Chronic DHEA deficiency is a risk factor for developing the degenerative diseases of aging according to the preponderance of evidence existing in the scientific literature.

Some people obtain a baseline DHEA-s blood test before beginning DHEA replacement therapy. However, based upon numerous DHEA blood tests evaluated by the Life Extension Foundation, anyone over age 40 who does not supplement DHEA is already deficient in serum DHEA. Therefore, it may be more economical to have the first DHEA blood test three to six weeks after initiating DHEA replacement therapy. There are precautions that should be observed that are different for men and women.

Men

Before initiating DHEA therapy, men should know their serum PSA (prostate specific antigen) level and have passed a digital rectal exam.

We have previously recommended that men with prostate cancer should avoid DHEA. Our concern is that in some men, DHEA may convert into testosterone and other growth factors that could cause existing prostate cancer cells to propagate. In some men, however, DHEA will mildly elevate estrogen levels, which would theoretically be good for those with prostate cancer since estrogen is known to help suppress prostate cancer cell growth. At the end of this article is a diagram showing the different endocrine pathways that DHEA can transform to in the body.



The preponderance of the published literature shows that higher DHEA blood levels do not cause prostate cancer. In fact, recent studies indicate that DHEA may confer a protective effect against prostate cancer. While some doctors still express theoretical concern that DHEA could cause prostate cancer, this theory loses credibility upon reading scientific studies showing that DHEA may protect against the development of prostate cancer.

Most prostate cancers develop in aged men that have extremely low levels of DHEA compared to when they were young. DHEA levels decline with age, yet prostate gland enlargement and cancers increase with age. Is it possible that DHEA, being a weak androgen, can actually attach to and block testosterone or DHT receptors on prostate tissue, thus preventing the influence by more powerful androgens? We do not fully know the answer to this question, which is why we advise prostate cancer patients to proceed cautiously in considering whether or not to use low-dose DHEA.

Those with existing prostate cancer have a difficult decision to make in deciding whether or not to supplement with DHEA. On one side are the studies showing DHEA to be critically important to just about every part of the body. A substantial body of evidence indicates that DHEA protects against and alleviates many age-related diseases and improves quality of life scores. Therefore, asking a prostate cancer patient to forgo the

systemic benefits of partial DHEA restoration therapy could mean that prostate cancer patient will suffer other serious diseases related to DHEA deficiency. On the other hand is the risk that higher DHEA levels could cause increased propagation of prostate cancer cells.

If prostate cancer patients are going to supplement with DHEA, we would suggest a dose not higher than 15 mg to 25 mg every day or every other day. Most men (without prostate cancer) take 50 mg to 75 mg of supplemental DHEA every day to fully restore serum DHEA to youthful ranges. It may therefore be possible for a prostate cancer patient to enjoy some of the benefits of DHEA without risking a PSA elevation by taking a lower dose of DHEA, but we don't know this for sure at this time. One problem with prostate cancer patients taking DHEA are the contradicting studies in published literature and the fact that no definitive studies exist to confirm if low-dose DHEA is safe.

Prostate cancer patients who choose to experiment with low-dose DHEA replacement are advised to know their baseline PSA (prostate specific antigen) before initiating supplementation with DHEA. Another blood test that helps to determine prostate cancer activity in addition to the PSA is the PAP (prostate acid phosphatase). Monthly PSA (and PAP) tests are recommended, along with physician supervision, if a prostate cancer patient is going to take even low dose DHEA. Low-dose DHEA is defined as 15 mg to 25 mg every day or every other day. Any clinical indication or blood test reading that DHEA may be causing increased prostate cancer cell propagation means that DHEA supplementation should be discontinued immediately.

Before any prostate cancer patient takes supplemental DHEA, they should read the related scientific abstracts posted at the Foundation's website. These abstracts point to the risks that are known at this time, so that those with prostate cancer can make an informed choice as to whether or not to consider any form of DHEA replacement therapy. You can also access the full text papers of these abstracts at www.lef.org—just look under DHEA Replacement Therapy and click on to these papers. For those who are fortunate enough to have a cooperative physician, sharing these scientific papers with their doctors could assist in making a choice as to whether or not to consider any form of DHEA replacement therapy.

To reduce the risk that hormone modulation with DHEA could contribute to a prostate problem, men taking DHEA are also advised to take:	
Vitamin E	400 to 800 IU a day
Selenium	200 to 600 mcg a day
Mega Soy Extract	one to two capsules per day (40% isoflavone extract)
Lycopene Extract	20 to 40 mg a day

Saw Palmetto Extract	160 mg, 2 times a day
Pygeum Extract	50 mg, 2 times a day
Nettle Extract	120 mg, 2 times a day
Gamma Tocopherol	210 mg

We have previously recommended that men with severe benign prostate hypertrophy (BPH) avoid DHEA since DHEA may convert into estrogen and/or dihydrotestosterone(DHT), which could worsen the problem. Based on the newly identified benefits of DHEA, those with benign prostate disease may be able take low doses of DHEA if they also take an aromatase inhibitor such as the drug Arimidex (0.5 mg once or twice a week) only if estrogen levels are high and the drug Proscar (5 mg a day) to suppress excess DHT. A dietary supplement that functions as a mild aromatase inhibitor is the flavonoid chrysin (found in the Super Mira Forte formula). Saw palmetto can block DHT activity on prostate cell receptor sites and nettle extract can block estrogen receptor sites on prostate cells. Life Extension members obtain saw palmetto and nettle extracts in the popular Natural Prostate Formula or Super Saw Palmetto/Nettle Root Formula. Men taking DHEA should refer to the Male Hormone Modulation Protocol (or in the book Disease Prevention and Treatment) for additional hormone balance testing that can be done at when serum DHEA and PSA are being tested.

Healthy men over 40 should consider checking their PSA and DHEA-s serum levels every 6 to 12 months. Men should also periodically check their blood levels for free testosterone and estrogen to make sure that DHEA is following a youthful metabolic pathway.

Women

DHEA can increase serum estrogen levels in women and eliminate the need for estrogen replacement therapy in some women. To help protect cells (especially breast cells) from excessive proliferation in response to estrogen, women taking DHEA should also take additional supplements. (See box below.)

Women taking DHEA are also advised to take:	
Melatonin	500 mcg to 3 mg every night
Vitamin E Succinate	400 to 800 IU a day
Mega Soy Extract	135 mg, twice a day (40% isoflavone extract)
Indole-3-Carbinol	200 mg, twice a day
Vitamin D3	1000 to 1400 IU a day
Gamma Tocopherol	210 mg

Women should consider estrogen and testosterone testing when they take their DHEA blood test in order to evaluate DHEA's effect on their blood levels of estrogens.

Women who have been diagnosed with an estrogen-dependent cancer should consult their physicians before beginning DHEA therapy. Some studies indicate that higher serum DHEA protects against breast cancer, but no adequate studies have been done to evaluate the effects of DHEA in breast cancer patients. If DHEA were to elevate estrogen too much, this could theoretically increase the risk of breast cancer. (Women taking DHEA should refer to the Female Hormone Replacement protocol for information about restoring youthful hormone balance.)

Liver disease

Men or women with existing liver disease (such as viral hepatitis or cirrhosis) should consider taking DHEA sublingually (under your tongue) or using a topical DHEA cream to reduce the amount of DHEA entering the liver. DHEA is converted by the liver into DHEA-s (dehydroepiandrosterone sulfate). Those with liver disease should carefully monitor liver enzyme levels to make sure that DHEA therapy is not making existing liver disease worse.

DHEA is best taken early in the day or possible insomnia could result. DHEA is normally produced by the adrenal glands early in the day and then converted by the liver to DHEA-s by midday when the DHEA/DHEA-s ratio is usually stabilized (10% DHEA/90% DHEA-s).

