

# DHEA

DHEA is a common over the counter hormone being used by many Americans without any knowledge of the risk and benefits of the product. This article provides an overview of this hormone.

Dihydroepiandrosterone (DHEA) is the most abundantly produced hormone produced in the young adult. It is produced by the nervous system and the reticularis zone of the adrenal gland. The finding that DHEA is produced by the brain (hypothalamus and cortical astrocytes) is new. Once produced, this hormone can be converted into sex hormones. Levels of DHEA decline with age, during stress and during certain diseases. This hormone reaches its peak level of 200 to 400 micrograms per deciliter at age 25.

As one ages there is a significant decline in the amount of this hormone independently from cortisone levels. This occurs in both sexes and if it produces clinical symptoms of fatigue, myalgia, poor concentration, depression and low libido has been termed the andropause. Menopause and the administration of estrogens hasten this decline. Along with a decline of testosterone, estrogen, growth hormone, and sometimes thyroid levels or utilization, DHEA deficiency is a part of a complex endocrinopathy of old age.

Both progesterone and DHEA are derived from another hormone called pregnanolone. The pregnanolone converts to DHEA sulfate (DHEA-S) and then this is converted into DHEA. The DHEA-S is more stable in the blood and is usually what we measure in a blood test. DHEA is then converted to androstenedione and other metabolites.

Both DHEA and DHEA-S are relatively inactive carrier molecules. There is some information that DHEA-S can have a direct effect in improving immunity, and assist with memory, concentration and depressive problems. Experimentally DHEA has been shown to protect critical areas of the brain from toxic exposures. High doses of this hormone in rats protects against Type II diabetes and obesity. In a rabbit with a model of accelerating arteriosclerosis, DHEA reduces progression in the absence of any changes in the lipoproteins. DHEA main effect is be converting to estrogen and testosterone. It is estimated that 30 to 50% of androgens in men are produced in peripheral tissues by DHEA. This is even more important in a women since 75% of the estrogen is made by peripheral conversion before menopause and 100% is made this way after menopause. The active decline in DHEA-S during aging especially if it occurs prematurely (before age 60) is thought by some to be related to a

long list of age related diseases such as obesity, cardiovascular disease, osteoporosis, loss of muscle tone, cancer and insulin resistance. In animals, deficiency of DHEA is correlated with lower immunity. The addition of DHEA enhances the production of IL-2, interferon gamma, and may lower Th2 cytokines from lymphocytes. Deficiencies are found in lupus, rheumatoid arthritis, fibromyalgia, chronic fatigue syndrome, AIDS and Alzheimer's disease.

### **Benefits**

- Reduce inflammation in animals and humans including lupus
- Help restore a better immune system as one gets older
- Improve sex hormone levels
- May help immune function in AIDS
- May help Chronic Fatigue Syndrome
- May help fight stress
- Improves sensitivity to insulin
- May help fight Alzheimer's disease

### **Risks**

- Studies in animals may not be applicable to man
- Still learning risks and benefits of this hormone
- Not a prescribed drug so question quality control
- Too much of this hormone, like thyroid and estrogen, can be harmful.
- Produces acne in women if they have that tendency. This can be improved if the dose is reduced.
- In some women the menses can be altered, moods made worse and rage or angry attacks occur. This is dose and sensitivity related.
- Cancer risk - uncertain. Data conflicting at this time. Don't take this product if you have a strong family history or personal history of breast or prostate cancer. If you take it monitor your PSA or have a mammogram.

### **Dose:**

**Men - 50 mg. day**

**Women - 25 mg day**

these can be modified in a custom pharmacy to give a smaller or larger dose as required.

This clinic does not recommend the indiscriminate use of any hormone. We measure blood levels and if they are sub optimal then the product can be used and may be efficacious. I believe that levels of 500 micrograms in men and 250 micrograms per deciliter in women are optimal. (DHEA-S)

DHEA can make a clinical difference with some individuals who are low of this hormone. It is probably safe to try it if you understand the benefits and risks. You may print this information out and share it with your health care provider if you wish.

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references available upon request.

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