DHEA

Scientific Names: Dehydroepiandrosterone, Prasterone[1]

Common Names: DHEA, GL701[1]

Active Ingredients: Dehydroepiandrosterone (DHEA) is a hormone precursor for estrogens and androgens that is found naturally in the human body. The DHEA that is sold in health supplements is isolated from the wild yam.[1]

MOA: DHEA is produced endogenously in the human body by the adrenal gland, liver, and minute amounts in the brain. In men DHEA is also produced in the testes. DHEA is metabolized to androstenedione, which is the major precursor of estrogens and androgens.[2] DHEA changes the ratio of circulating androgens and estrogens. In women supplementation with DHEA seems to significantly increase circulating androgens, but not as much an increase in estrogens in women. In men supplementation significantly increases circulating estrogens while a smaller amount of androgen increase is seen.[3,4] The androgen and estrogen effects may be responsible for the benefits of DHEA.[5] In the brain, DHEA is concentrated in the limbic regions and may act as an excitatory neuroregulator, which antagonizes GABA trasmission.[1] DHEA supplementation may also inhibit thromboxane A2 synthesis in platelets, increase IGF-1, increase cGMP, and nitric oxide synthesis, which may have beneficial effects on cardiovascular risk.[6]

Indications and efficacy:
DHEA may be efficacious for:
1) Depression – In one study with 22 patients with major depression (either medication free or stabilized on antidepressant regimens), patients received a maximum dose of 90mg/ day of DHEA or placebo for 6 weeks. The DHEA group showed a significant decrease in their Hamilton Depression Rating Scale compared to placebo.[12]
2) Erectile dysfunction – In a clinical trial, 40 patients with erectile dysfunction took either 50mg of DHEA or placebo once daily for 6 months. DHEA treatment was associated with higher Scores on the International Index of Erectile Dysfunction (a 15 question survey to access the success of therapy). [13]
3) Adrenal insufficiency – In one double-blinded study 24 women with adrenal insufficiency received either 50mg DHEA or placebo QD for 4 months. DHEA supplementation helped return circulating sex hormones to normal ranges and significantly improved the well-being and sexuality of women based on several tests for anxiety/ depression and an increase in sexual thoughts, interest and satisfaction.[14]
4) Systemic Lupus Erythematosus – In one multicenter randomized double-blind placebo controlled trial 120 women with active SLE received 200mg of DHEA or placebo for 24 weeks. DHEA significantly reduced the number of flare-ups by 16 % ($p=0.044$), and improved patient's global assessment of disease activity.[8] In another study 50 women were treated with placebo or 50-200mg of DHEA for 6-12 months. DHEA was associated with a decrease disease activity (measured by the SLE disease activity index

score ($p<0.01$), patient global assessment ($p<0.01$), and physician global assessment ($p<0.05$). [15]
5) Topically for vaginal atrophy and increased bone mineral density – Topical DHEA cream was evaluated in fourteen 60-70 year old women who used 10 % DHEA cream topically for 12 months. Vaginal epithelium maturation was stimulated in 8 of 10 women who had a maturation value of zero at onset of treatment; bone mineral density was also significantly increased at the hip after 12 months of treatment ($p<0.05$). [16]
6) To improve mental function and QOL for HIV patients – Plasma levels of DHEA and DHEA-S decrease with the progression of HIV disease. In a randomized, double blind clinical trial 32 patients with advanced HIV disease were given ether 50mg DHEA or placebo for 4 months. The patients in the DHEA group had significant increases in circulating DHEA-S levels ($p<0.01$), Mental Health ($p=0.001$) and Health Distress ($p=0.004$) dimension scores. [9]

Contraindications/allergies: DHEA is contraindicated in patients with history of psychiatric disease, history of mania, and bipolar disorder, this is due to an increase risk of mania[1]. It is also contraindicated in patients with hormone sensitive cancers due to its estrogen effects.[10]

Dosage forms, recommended doses, duration:
Capsules from 5-200 mg[11]
Creams, ointments[11]
Lozenges[11]

Recommended starting doses are from 5-10 mg[11]
Titrate up weekly by 5-10 mg until desired dose/effects[11]

Depression - 30-90mg qd[1, 12]
Erectile dysfunction - 50mg qd[1, 7, 13]
Adrenal insufficiency - 50mg qd[1, 14]
SLE - 50-600mg qd[1, 8, 15]
Vaginal atrophy - 10% cream applied qd[1, 16]
HIV - 50mg qd [9]

DHEA has been used safely taken orally for 6 weeks to 6 months in some clinical trials.[1, 7, 9, 12]

DHEA cream has been used safely for up to 12 months in one clinical trial.[16]

Drug Interactions and Drug–disease interactions:
Glucocorticoids - these drugs can suppress endogenous DHEA production[1]
Insulin - insulin can decrease endogenous DHEA-S[1]
Triazolam - DHEA can increase plasma levels of triazolam[1]
Drugs metabolized through CYP 3A - DHEA inhibits CYP 3A [1]
Diabetes - DHEA can increase insulin sensitivity[1]
Hormone sensitive cancers - DHEA has estrogenic like effects[10]
Liver dysfunction - DHEA can exacerbate liver dysfunction[1]

Mood disorders - DHEA can cause mania[1]

Other safety issues: Long-term use of DHEA, or use of high doses has not been evaluated, and may not be safe.[1]

References:

1) http://www.naturaldatabase.com
2) Van Vollenhoven RF. Dehydroepiandrosterone in systemic lupus erythematosus. Rheum Dis Clin North Am 2000;26(2):349-62.
3) Arlt W, Haas J, Callies F, et al. Biotransformation fo oral DHEA in elderly men: Significant Increase in circulating estrogens. J Clin Endocrinol Metab 1999;84(6):2170-6
4) Barnhart KT, Freeman E, Grisso JA, et al. The effect of dehydroepiandrosterone supplementation to symptomatic perimenopausal women on serum endocrine profiles, lipid parameters, and health-related quality of life. J Clin Endocinol Metab 1999:84(11):3896-902.
5) Ebeling P, Koivisto VA. Physiological importance of dehydroepiandrosterone. Lancet 1994;343:1479-81.
6) Pepping J. DHEA: dehydroepiandrosterone. Am J health Syst Pharm 2000; 57: 2048-50, 2053-4, 2056.
7) Reiter WJ, Schatzl G, Mark I, Zeiner A, Pycha A, Marberger M. Dehydroepiandrosterone in the treatment of erectile dysfunction in patients with different organic etiologies. Urol Res 2001;29(4):278-81.
8) Chang DM, Lan JL, Lin HY, Lou SF. Dehydroepiandrosterone treatment of women with mild-to-moderate systemic lupus erythematosus: a multicenter randomized, double-blind, placebo-controlled trial. Arthritis Rheum 2002;46(11):2924-7.
9) Piketty C, Jayle D, et al. Double-blind placebo-controlled trial of oral dehydroepiandrosterone in patients with advanced HIV disease. Clin Endocrinol 2001;55(3):325-30.
10) Stoll BA. Dietary supplements of dehydroepiandrosterone in relation to breast cancer risk. Eur J Clin Nutr 1999;53:771-5.
11) Sahelian R. DHEA: a practical guide. Garden City Park (NY): Avery Publishing Group; 1996.
12) Wolkowitz OM, Reus VI, keebler A, et al. Double-blind treatment of major depression with dehydroepiandrosterone. Am J Psychiat 1999;156:646-9.
13) Reiter WJ, et al. Dehydroepiandrosterone in the treatment of Erectile dysfunction: A prospective double-blind, randomized, placebo controlled study. Urol 1999;53(3):590-5.
14) Arlt, W, Callies F, van Vlijmen JC, et al. Dehydroepiandrosterone replacement in women with adrenal insufficiency. N Engl J Med 1999;341:1013-20.
15) Van Vollenhoven RF, Morabito LM, Englemen EG, et al. Treatment of Systemic Lupus Erythematosus with dehydroepiandrosterone: 50 patients treated up to 12 months. J Rheumatol 1998;25:285-9

16) Labrie F, Diamond P, Cusan, et al. Effect of 12-month dehydroepiandrosterone replacement therapy on bone, vagina, and edometrium in postmenopausal women. J Clin Endocrinol Metab 1997;82(10):3498-505.