

CORTISOL/DHEA REFERENCES:

Marin P. Cortisol secretion in relation to body fat distribution in obese premenopausal women. *Metabolism* 1992;41:882-886.

Nestler JE, Clore JN, Blackard WG. Dehydroepiandrosterone: (DHEA) the missing link between hyperinsulinemia and atherosclerosis? *Federation of American Societies for Experimental Biology* 1992;6(12):3073-3075.

Shafagoj Y, Opoku J, Qureshi D, Regelson W, Kalimi M. Dehydroepiandrosterone prevents dexamethasone-induced hypertension in rats. *American Journal of Physiology* 1992;263(2 Pt 1):E210-213.

ABSTRACT: Dehydroepiandrosterone (DHEA) is an endogenous steroid having a wide variety of biological and biochemical effects. In the present study, we have examined the role of DHEA on various rodent models of experimental hypertension. Sprague-Dawley rats were given subcutaneous injections of 1.5 mg dexamethasone every alternate day, resulting in an increase in systolic blood pressure within 1 wk. Interestingly, administration of a pharmacological dose of 1.5, 3, or 7.5 mg DHEA along with dexamethasone prevented dexamethasone-induced hypertension in a dose-dependent manner. DHEA had no effect on the hypertension induced by deoxycorticosterone acetate (DOCA)-salt administration using uninephrectomized rats or on the genetic model of spontaneously hypertensive rats. Dexamethasone administration resulted in a significant weight loss in rats, which was not prevented by simultaneous administration of DHEA. These results indicate that dexamethasone-mediated weight loss may involve mechanisms separate from its hypertensive action. Dexamethasone treatment resulted in a significant decrease in food consumption that was not reversed by DHEA. It is concluded that DHEA at doses above physiological levels when given subcutaneously has no effect on DOCA-salt or a genetic model of hypertension but has a beneficial effect on dexamethasone-induced hypertension.

Barrett-Connor E, Khaw KT, Yen SS. A prospective study of dehydroepiandrosterone sulfate, mortality, and cardiovascular disease. *New England Journal of Medicine* 1986;315(24):1519-1524.

ABSTRACT: It has been postulated that dehydroepiandrosterone (DHEA) and its sulfate ester, dehydroepiandrosterone sulfate (DHEAS), the major secretory products of the human adrenal gland, may be discriminators of life expectancy and aging. We examined the relation of base-line circulating DHEAS levels to subsequent 12-year mortality from any cause, from cardiovascular disease, and from ischemic heart disease in a population-based cohort of 242 men aged 50 to 79 years at the start of the study. Mean DHEAS levels decreased with age and were also significantly lower in men with a history of heart

disease than in those without such a history. In men with no history of heart disease at base line, the age-adjusted relative risk associated with a DHEAS level below 140 micrograms per deciliter was 1.5 (P not significant) for death from any causes, 3.3 (P less than 0.05) for death from cardiovascular disease, and 3.2 (P less than 0.05) for death from ischemic heart disease. In multivariate analyses, an increase in DHEAS level of 100 micrograms per deciliter was associated with a 36 percent reduction in mortality from any causes (P less than 0.05) and a 48 percent reduction in mortality from cardiovascular disease (P less than 0.05), after adjustment for age, systolic blood pressure, serum cholesterol level, obesity, fasting plasma glucose level, cigarette smoking status, and personal history of heart disease. Our conclusions are limited by the single determination of DHEAS levels, but the data suggest that the DHEAS concentration is independently and inversely related to death from any cause and death from cardiovascular disease in men over age 50.

Bhatavdekar JM, Patel DD, Chikhlikar PR, Mehta RH, Vora HH, Karelia NH, Ghosh N, Shah NG, Suthar TP, Neema JP, et al. Levels of circulating peptide and steroid hormones in men with lung cancer. *Neoplasma* 1994;41(2):101-103.

ABSTRACT: Levels of circulating peptide (FSH, LH, prolactin, ACTH, calcitonin, gastrin and insulin-like growth factor-1 [IGF-1]) and steroid (estradiol, progesterone, DHEA-S and testosterone) hormones were estimated by radioimmunoassay (RIA) and immunoradiometric assay (IRMA) in male patients with lung cancer (n = 37) pre-therapeutically and compared with 25 age matched healthy controls. In this retrospective study, FSH, LH, prolactin, ACTH, calcitonin, gastrin and IGF-1 were significantly higher with concomitant lower levels of DHEA-S and testosterone, while the difference was statistically non-significant for estradiol and progesterone in patients with lung cancer when compared with controls. Early stage patients (Stage II) exhibited higher levels of gastrin as compared to advanced stage patients (Stages III and IV). It is suggested that hormonal imbalance might play an important role in the development and progression in male patients with lung cancer.

Nasman B. Abnormalities in adrenal androgens, but not of glucocorticoids, in early Alzheimer's disease. *Psychoneuroendocrinology* 1995;20:83-94.

Wisniewski TL, Hilton CW, Morse EV, Svec F. The relationship of serum DHEA-S and cortisol levels to measures of immune function in human immunodeficiency virus-related illness. *American Journal of the Medical Sciences* 1993;305(2):79-83.

ABSTRACT: Human immunodeficiency virus (HIV) is a major cause of immunoincompetence. Whether the virus, itself, accounts for all the deficiency remains

in question. Steroids can also influence immune function; glucocorticoids cause immunoincompetence while dehydroepiandrosterone (DHEA) enhances immune function. Changes in the levels of such hormones during the course of HIV illness might result in significant changes in immune competence. The purpose of this study is to investigate whether dehydroepiandrosterone-sulphate (DHEA-S) or cortisol levels correlate with absolute CD4 lymphocyte levels. Plasma for cortisol and DHEA-S was drawn from 98 adults with HIV. Of these, 67 had simultaneous CD4 levels. Cortisol levels were 12.4 +/- 4.6 micrograms/dl, DHEA-S 262 +/- 142 micrograms/dl, and CD4 levels were 308 +/- 217/mm³ (mean +/- SD). Correlational analysis revealed a significant relationship between DHEA-S and CD4 levels ($r = 0.30$; $p = 0.01$) but not between CD4 levels and cortisol ($r = 0.11$; $p = 0.36$) or cortisol/DHEA-S ratios ($r = 0.17$; $p = 0.16$). When analyzed by clinical subgroups, significant differences were also found with a decrease in DHEA-S levels seen in persons with more advanced illness. The data exhibit a positive relationship between the immune status of patients with HIV-related illness and DHEA, leading to the hypothesis that DHEA deficiency may worsen immune status.

ALSO SEE the following review, in which many of the above refs are cited:

Shealy N. A review of dehydroepiandrosterone (DHEA). *Integrative Physiological and Behavioral Science* 1995;30(4):308-313.

...and another good review:

Velicheti R, Catanzaro J, Suen R. Physiology and clinical relevance of salivary adrenal steroids (cortisol, DHEA and DHEAS) in natural medicine. *Townsend Letter for Doctors and Patients* 1996;July:36-41.

...and the Institute of HeartMath's DHEA/cortisol study:

McCraty R, Barrios-Choplin B, Rozman D, Atkinson M, Watkins AD. The impact of a new emotional self-management program on stress, emotions, heart rate variability, DHEA and cortisol. *Integrative Physiological and Behavioral Science* 1998;33(2):151-170.