



Review

DHEA for postmenopausal women: A review of the evidence

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Abstract

Background

Dehydroepiandrosterone (DHEA) and its sulphate DHEAS are the most abundant sex steroids in women and provide a large reservoir of precursors for the intracellular production of androgens and estrogens in non-reproductive tissues. Levels of DHEA and DHEAS decline with age. It has been proposed that restoring the circulating levels of these steroids to those found in young women may have anti-aging effects and improve sexual function and wellbeing in postmenopausal women.

Aim

To review the published literature for the efficacy of DHEA therapy data regarding safety.

Methods

A systematic literature search of MEDLINE (Ovid) and Pub-Med (1966 to November 2009) for original studies that included any of the terms dehydroepiandrosterone, DHEA or DHEAS, sexual function, wellbeing, women and metabolic parameters of interest.

Results

Overall the interpretation of the data was limited by inadequate sample size and short treatment duration of available studies with inconsistent results. The more recent randomized controlled trials however do not

support a benefit of oral DHEA therapy for women. A possible benefit that emerged is that vaginally administered DHEA may improve vaginal atrophy with concomitant improvements in sexual function in women who are estrogen deficient due to menopause. The potential value of oral DHEA therapy for postmenopausal women is called into question.

Introduction

DHEA and its sulphate DHEAS are the most abundant steroids in the human body, however their mechanism of action and physiological implications are not well understood. There is much interest in the possible benefits of administering oral DHEA to postmenopausal women in order to restore serum levels to those of young women. In the USA where the sale of DHEA without prescription has not been restricted by the Food and Drug Administration (FDA), there is considerable off-label or 'over-the-counter' use of DHEA for the purposes of maintaining sexual function, youthfulness, wellbeing and cognition. DHEA is seen as the 'elixir of youth', despite lack of efficacy or safety evidence.

This review will focus on the literature regarding exogenous DHEA therapy for postmenopausal women and the effect on sexual function, wellbeing and the metabolic parameters lipid and carbohydrate metabolism.

Section snippets

Methods

The existing literature was searched using Medline (Ovid) and Pub-Med for original studies. Search terms used included DHEA, DHEAS, dehydroepiandrosterone, dehydroepiandrosterone sulphate, randomized trial, androgen replacement, menopause, libido, wellbeing and lipids, cholesterol, insulin and glucose. We included RCTs that compared DHEA with placebo therapy in women, published as full manuscripts in the English language. The primary outcomes of interest were sexual function, wellbeing, lipids...

The physiology of DHEA/DHEAS

Dehydroepiandrosterone (DHEA) is an important precursor sex steroid secreted in large amounts by the adrenals in humans and other primates but not in lower species. It is not a hormone but is a prohormone or pre-androgen [1]. In women during the reproductive years in addition to the sex steroids testosterone and estrogen, the adrenal glands and ovaries produce DHEA. Its sulphated form dehydroepiandrosterone sulphate (DHEAS) is primarily synthesized by the adrenals, has a longer half-life and...

Sexual function

It should be noted that problems with sexual function are not limited to women of a particular age group however this review is restricted to postmenopausal women. Population based studies indicate the prevalence of sexual problems among women ranges from 9% to 43% [23]. More specifically Hypoactive

Sexual Desire Disorder (HSDD) which is characterized by persistent lack of sexual desire causing personal distress affects 7–26% of community dwelling women [24]. A recent survey of postmenopausal...

The role of hormones in female sexual function

Knowledge of the role of the sex steroid hormones, estrogens and androgens, in normal female sexual function is limited and is currently the subject of further investigation. In the majority of women, estrogen deficiency associated with menopause results in vasomotor symptoms and vaginal atrophy. During the menopause transition, women can experience cognitive changes and mood volatility possibly as a consequence of night sweats and associated sleep disturbance [26]. The resultant impaired...

DHEA and wellbeing

As well as loss of libido, women commonly report experiencing fatigue and reduced wellbeing at menopause [52], [53]. Some [36], [37], [54] but not all [38] studies show improvements in wellbeing with testosterone treatment. Given that DHEA is converted to estrogen and testosterone it follows that treatment with DHEA may have a similar beneficial effect on wellbeing. However the data to support the efficacy of exogenous DHEA therapy on wellbeing during menopause is inconsistent. The existing...

Effects of DHEA on lipids

It has been proposed that exogenous DHEA may influence cardiovascular disease risk primarily by effects on lipoprotein lipids. Research using animal models has shown that DHEA has anti-atherogenic effects [57], [58], [59]. There is also a suggestion that DHEA may play a cardio-protective role in men but not women [60], [61] which suggests that DHEA exerts its action via conversion to estrogens and androgens. However recently Cheng et al. [59] have provided in vitro data to suggest the possible...

Effects of DHEA on carbohydrate metabolism

The lower levels of DHEA seen with aging have been associated with impaired glucose tolerance, insulin resistance and diabetes [1], [82], [83]. Table 3 summarizes the studies examining the effects of exogenous DHEA on carbohydrate metabolism in postmenopausal women. Studies have shown increased insulin sensitivity after treatment with DHEA, [72], [84], [85] decreased insulin sensitivity [42] or no modification [43], [56], [68], [79], [80], [81], [86], [87]. The results are inconsistent and the...

Conclusions

There is little convincing data to support the use of oral DHEA therapy in healthy aging individuals to improve conditions synonymous with normal aging such as reduced sexual function or diminished wellbeing. No well-designed clinical trial has confirmed the benefit of DHEA supplementation in postmenopausal women on sexual function or wellbeing, calling into question the clinical use of oral DHEA therapy for this group.

Findings regarding the safety of DHEA use are contradictory. Although no...

Competing interest

The authors have no competing interest....

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Contributors

Both Mary Panjari and Susan Davis contributed equally to the writing of this review and both approved the final version....

Provenance and peer review

Commissioned and externally peer reviewed....

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2022, Steroids

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The therapeutic effect of dehydroepiandrosterone (DHEA) on vulvovaginal atrophy

2021, Pharmacological Research

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Associations between androgens and sexual function in premenopausal women: a cross-sectional study

2020, The Lancet Diabetes and Endocrinology

Citation Excerpt :

...Our findings do not indicate dehydroepiandrosterone to be an effective therapy for low sexual desire or pleasure in premenopausal women. Dehydroepiandrosterone is referred to as a pre-androgen because it is converted into testosterone in peripheral tissues by 5 α -reductase.^{26–29} It is the most abundant sex steroid in women,³⁰ with serum concentrations in women of reproductive age being 14-times higher than that of testosterone.^{3...}

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Chapitre 8: Sexualité et ménopause

2019, Journal of Obstetrics and Gynaecology Canada

Female Sexual Dysfunction: A Systematic Review of Outcomes Across Various Treatment Modalities

2019, Sexual Medicine Reviews

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Efficacy of intravaginal dehydroepiandrosterone (DHEA) for symptomatic women in the peri- or postmenopausal phase

2018, Maturitas

Citation Excerpt :

...Hormone preparations containing DHEA have been widely available over the counter for many years and are frequently used by women instead of or in addition to HRT. None of the clinical reviews so far have recommended routine DHEA supplementation, owing to inconsistent or modest evidence for its efficacy with inconclusive or non-significant results regarding its impact on disease activity or health outcomes [1–9]. This article reviewed recent research, published since the 2015 Cochrane review on the subject [1], regarding the role of DHEA treatment for peri- and postmenopausal women....

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