

## **Effects of six-month oral dehydroepiandrosterone supplementation on beta-endorphin response to oral glucose tolerance test in obese and non-obese pre and postmenopausal women**

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**Context:** Dehydroepiandrosterone/dehydroepiandrosterone sulfate (DHEA/DHEAS) are the most abundant circulating steroid hormones in humans but also a medication marketed as 'anti-aging superhormones' or 'fountain of youth'. DHEA could be considered active as a pre-hormone because it produces metabolites that induce modifications which may counteract the phenomena of aging and menopause. Recent data confirm that DHEA induces an increase in beta-endorphin. Beta-endorphin is a neuropeptide involved in several brain functions: its plasma levels are higher in obese women and its release increases after oral glucose test (OGTT) in normal or obese women. Circulating levels beta-endorphin is modulated by estrogens: the withdrawal of sex steroid hormones in the climateric period causes a decrease in plasma beta-endorphin.

**Objective:** The aim of the study was to evaluate plasma beta-endorphin levels in response to OGTT in pre- and postmenopausal women, with normal or overweight body mass index (BMI), treated with DHEA supplementation (50 mg/day), in order to investigate the effects of a 6-months DHEA supplementation on beta-endorphin levels.

**Patients:** Pre- and postmenopausal women, with normal or overweight body mass index (BMI), treated with DHEA supplementation (50 mg/day).

**Main Outcome Measures:** 24 healthy women (age range 45-55 years) were included and were subdivided in four groups of six women according to BMI and their menopausal state: group A, premenopausal women with BMI < 25 (control); group B, premenopausal women with BMI > 25 (obese); group C, postmenopausal women with BMI < 25 (control); group D, postmenopausal women with BMI > 25 (obese). All women were treated with DHEA (50 mg p.o./day) for 6 months.

**Results:** The area under the curve (AUC) was used to evaluate plasma beta-endorphin levels at 120 minutes after oral glucose ingestion. In postmenopausal women, regardless of BMI, low basal plasma beta-endorphin levels were found. A significant increase in plasma beta-endorphin levels was shown in control premenopausal women after 6-months DHEA supplementation. In other groups, no significant modifications of plasma beta-endorphin levels were observed during DHEA supplementation.

**Conclusions:** These data confirm an increase in plasma beta-endorphin levels with DHEA supplementation. Beta-endorphin release depends on gonadal steroids, while it is only in part influenced by body weight.