

Supplementations of Low Doses of Fish Oil Effects on Clinic and Ambulatory Blood Pressure Levels in Treated Hypertensive Postmenopausal Women Sex Hormones Influence

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In the present study, we evaluate the changes that fish oil intake has (as a treatment's coadjutant) over women's blood pressure (BP) levels and the possible changes in their sexual hormones. For this reason, two groups were constituted: one group took fish oil during 6 months (SG), and the other group did not (CG). Anthropometric, dietetic, blood pressure and sex hormones controls, including β -estradiol, total testosterone, free testosterone and dehydroepiandrosterone (DHEA), were carried out by RIA techniques at the third and sixth month of starting or not the intake of fish oil, and 3 months after the end of the supplementation. Our study shows improvements in blood pressure only in the group that effectuated the supplementation. In these women, an increase of the total weight was noticed, accompanied by a decrease in the skinfolds. In regard to the hormones, it calls our attention the high DHEA levels in both groups. But the fish oil intake generated a very significant fall in it. Total testosterone also decreased significantly its concentrations. Therefore, we can conclude that the intake of low doses of fish oil produces a decrease in BP, and that the decline in androgenic hormones (DHEA and total testosterone) can play an important role in this decrease.

Keywords: Hypertension; DHEA; Testosterone; Estradiol; N3-fatty acids

Introduction

More than 25% of the female adult population worldwide is hypertensive [1]. Elevations in blood pressure (BP) in women are related to cardiovascular risk with the prevalence of hypertension [2,3], being particularly high among women aged ≥ 60 years. In United States, approximately 75% of postmenopausal women are hypertensive [4]. Hypertension is often accompanied by other cardiovascular risk factors, e.g., obesity, dyslipidemia, and diabetes mellitus [5]. It is noteworthy that the prevalence of hypertension-related cardiovascular complications is higher in postmenopausal women than in age-matched men. Indeed, these complications represent the leading cause of death in women [6]. In premenopausal women, endogenous estrogens maintain vasodilatation and thus, contribute to the BP control. Aging and the loss of endogenous estrogen production after menopause are accompanied by increases in BP, contributing to the high prevalence of hypertension in older women [7]. Cross sectional [8,9] but not longitudinal [10] studies showed a significant increase in systolic (SBP) and diastolic blood pressure (DBP), following the onset of menopause. Staessen et al. [8] reported a four-fold increase in the incidence of hypertension in postmenopausal women (40% in postmenopausal women vs. 10% in premenopausal women). However, relatively little is

known regarding the influence of androgens on BP and cardiovascular disease. There are reports of lower circulating testosterone and androstenedione levels in hypertensive men [11,12] and circulating testosterone levels in men with coronary artery disease [13] or myocardial infarction [14] are either unchanged or decreased. Furthermore, women suffering from chronic anovulation and displaying hypertestosteronemia have an increased risk of coronary artery disease and myocardial infarction. Moreover, men with testosterone deficiency following orchiectomy present a slightly lower mortality from heart disease, suggesting that lower testosterone may protect against cardiovascular disease [14]. In female SH rats testosterone increases BP when they are ovariectomized

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