Abstract

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Efficacy of a low dose of estrogen on antioxidant defenses and heart rate variability.

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Abstract

This study tested whether a low dose (40% less than the pharmacological dose of 17-β estradiol) would be as effective as the pharmacological dose to improve cardiovascular parameters and decrease cardiac oxidative stress. Female Wistar rats (n = 9/group) were divided in three groups: (1) ovariectomized (Ovx), (2) ovariectomized animals treated for 21 days with low dose (LE; 0.2 mg), and (3) high dose (HE; 0.5 mg) 17-β estradiol subcutaneously. Hemodynamic assessment and spectral analysis for evaluation of autonomic nervous system regulation were performed. Myocardial superoxide dismutase (SOD) and catalase (CAT) activities, redox ratio (GSH/GSSG), total radical-trapping antioxidant potential (TRAP), hydrogen peroxide, and superoxide anion concentrations were measured. HE and LE groups exhibited an improvement in hemodynamic function and heart rate variability. These changes were associated with an increase in the TRAP, GSH/GSSG, SOD, and CAT. A decrease in hydrogen peroxide and superoxide anion was also observed in the treated estrogen groups as compared to the Ovx group. Our results indicate that a low dose of estrogen is just as effective as a high dose into promoting cardiovascular function and reducing oxidative stress, thereby supporting the approach of using low dose of estrogen in clinical settings to minimize the risks associated with estrogen therapy.

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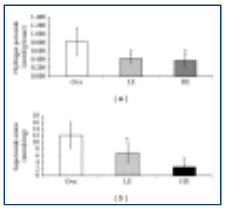

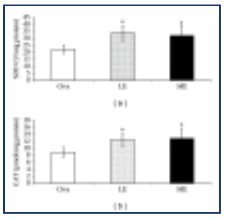

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