

The Effect of Aerobic Training on Plasma Estradiol and mir-206 and ER α Expression in mice with Breast Cancer

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Abstract

Introduction: The feedback loop among estradiol-estrogen receptor α -microRNA α -206 introduced as a novel mechanism in breast cancer. The aim of this study was to evaluate of the effect of aerobic training on regulatory process of this feedback loop in estrogen-dependant breast cancer mice.

Method: MC4-L2 breast cancer cells were injected into 20 Balb-c mice (6-8 weeks, 14-15g weight), then they were randomly divided into control and exercise groups (n=10). Exercise group completed aerobic training for 6 weeks, 5 days per week (14-18 m/min). After tumor emersion, width and length of tumor were measured by digital caliper every week. Mice were sacrificed 48 hours after the last exercise. Blood and tissue sampling were collected and stored in -70°. At first, total RNA was extracted by trizol and the expression levels of mir-206 and ER α were accounted with Real time-PCR and E2 were measured by ELISA Kit.

Results: Plasma E2 (P=0/001) and ER α (p=0/0001) expression was significantly decreased and the expression of mir-206 was significantly increased in exercise group compare with control group. Tumor size also had significantly reduction in exercise group compare with control group (p=0/037).

Conclusion: according to up-regulation effects of aerobic exercise training on mir-206 and down-regulation effects of it's on ER α expression and decreased level of plasma E2 in breast cancer mice, aerobic training could propel this feedback loop to reduce Cell proliferation and can be known as a novel mechanism in positive and adjuvant effects of exercise on breast cancer.

Keywords: Estrogen Receptor Dependent Breast Cancer, Aerobic Training, Mir-206, Estradiol.