**ORIGINAL ARTICLE** 

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## The Effect of endurance training on mir155 expression and SOCS<sub>1</sub> gene expression of tumor in female Mice with Breast Cancer

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## Abstract

**Background:** Exercise training plays an adjuvant and preventing role in breast cancer. The aim of the present study was to investigate the adjuvant role of exercise training on mir155 expression and  $SOCS_1$  gene expression in mice with estrogen-receptor positive breast cancer tumor.

**Methods:** sixteen female Balb/ C mice were randomly divided into Exercise-Tumor (ET) and Rest-Tumor (RT) groups. The mice were oriented in the environment a million estrogendependent breast cancer cells (MC4L2) were injected into each mouse. Subsequently, the ET group performed endurance exercise, 5 days per week for 6 weeks. Tumor volume was measured by digital caliper weekly. Finally, the mice were sacrificed; tumor tissue was removed and immediately frozen and kept in -70°C. Then RNA was extracted using the Trizol protocol and cDNA was synthesized according to guidelines of Kit Company. Finally, the real-time PCR method was performed and data was collected.

**Results:** There was significant difference in the  $SOCS_1$  gene expression and mir-155 expression between the ET group that was performed endurance training after malignancy and RT group, (p<0.05). The results were consistent with tumor growth rate.

**Conclusion:** Endurance training can reduce mir155 expression and increase  $SOCS_1$  gene expression in tumor tissue. Due to reduction in mir155 expression and increase in  $SOCS_1$  gene expression in ET group, it could be claimed that endurance training has adjuvant therapy role in breast cancer by decreasing oncogenic factors and increasing anti-tumor factors.

Keywords: Estrogen receptor dependent cancer, Endurance training, mir155 and SOCS<sub>1</sub>.