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Title: Evaluation of the relationship between promoter methylation of ADAMTS9-AS2 and TERC lncRNAs and the expression of these genes in breast cancer cell line (MCF-7A) and normal breast cell line (MCF-10A)

Summary:

Breast cancer accounts for about 30% of all cancers in women. Therefore, its early detection will play an important role in its treatment. Since lncRNAs have variable expression in cancer tissues compared to normal tissues, the potential of these molecules as a biomarker for disease diagnosis. Also, changes in the expression of lncRNAs in patients with different types of cancer and different races intensify the importance of using these molecules as biomarkers for disease diagnosis. The purpose of this study is to investigate the promoter methylation of two LncRNAs named TERC and ADAMTS9AS2 in breast cancer cell line (MCF-7) and normal breast cell line (MCF-10) and its relationship with increased or decreased gene expression in breast cancer. Paying attention to the important role of these two genes in the mechanisms of cancer, investigating and studying them in breast cancer patients can be useful in terms of basic and clinical sciences. The breast cancer cell line and the normal human breast cell line were cultured in flasks containing culture medium at 37°C in a CO2 incubator and after passage, when the density of the cells reached a suitable value, the cells were used for DNA extraction. and RNA was used. cDNA synthesis was performed. Synthesized cDNA was used for real time PCR using gene specific primers. Genomic DNA extracted after treatment with sodium bisulfite was analyzed using BSP (bisulfite sequencing PCR) method. Its product was sent for sequencing and finally two products were compared and changes were examined. Among the analyzed genes, a significant decrease in the expression of ADAMTS9-AS2 was observed in breast cancer samples compared to the normal control group. In addition, we observed significant methylation of ADAMTS9-AS2 gene in breast cancer samples compared to normal control group. In this analysis, we observed a significant increase in TERC gene expression in breast cancer samples compared to the control group. In addition, the TERC gene in breast cancer samples does not show significant methylation compared to the control group.

Keywords: Breast cancer, promoter methylation, lncRNA, TERC, ADAMTS9-AS2