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Study of Changes in Expression of Kallikrein-related Peptidase 6 (KLK6) as a Biomarker In Breast Cancer Tissues

Davood Amirimehr [1,*], Fourozandeh Mahjoobi [1], Nahid Nafissi [2]

[1] *Department of Medical Genetics, National Institute for Genetic Engineering and Biotechnology, Tehran, Iran*
[2] *Department of Surgery, Hazrat-e Rasoul Akram Hospital, Iran University of Medical Sciences, Tehran, Iran*

** Corresponding author: Davood Amirimehr, Department of Medical Genetics, National Institute for Genetic Engineering and Biotechnology, Tehran, Iran. E-mail: amirimehrdavood@gmail.com*

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Abstract

Introduction: Breast cancer is the most common cancer and the third cause of cancer deaths in women. Given the importance of early detection of cancer, the need to find the biomarkers associated with the disease is essential for the prognosis and early diagnosis of breast cancer. The kallikrein-related peptidase 6 gene (KLK6), is one of the genes that belong in the kallikrein gene family. Our main goal in this study is to examine the change of the expression of this gene in cancerous tumor in comparison with normal tissue samples in order to achieve biomarkers to predict the probability of developing a cancer or predict its progression.

Materials and Methods: 70 samples of fresh tissue, 35 healthy adjacent pathological samples and 35 tumoral samples- after the surgery of the breast cancer patients was collected and immediately transfer to -70 °C. After the RNA extraction and cDNA synthesis, we study the expression KLK6 and β-actin genes (as an internal control and housekeeping gene) with Real Time PCR.

Results: Changes in the expression of KLK6 gene in breast cancer was studied in tumoral and adjacent tumor tissues. Additive alteration of KLK6 expression within a tumoral tissue in comparison with the non-tumoral tissue was shown in 80 percent of the surveyed sample. If this gene has a significant statistical relationship, it can be used as a biomarker. Statistical analysis and definitive results will report after the completion of tests.

Conclusions: The expression of KLK6 gene in various studies has shown a significant change in tumor tissues in comparison with normal samples. The main goal of this study was to investigate the changes in the expression of KLK6 expression for obtaining biomarkers to prognosis and early detection of cancer in the Iranian population, so that it can be useful to improve the disease.