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Investigation of expression levels of DNA repair genes in molecular subtypes of breast cancer**Ece Salihoglu¹, Semra Demokan², Hasan Karanlik², Bensu Karahalil¹, Semen Önder² and Sevgiyarim Akaydin¹**¹Gazi University School of Pharmacy, Turkey²Institute of Oncology, Istanbul University, Turkey

Tip60 histone acetyltransferase (HAT) is critical importance for activation of DNA repair as well as plays role in chromatin remodeling and histone acetylation. After DNA damage, Tip60 acetyltransferase rapidly acetylates and activates ataxia-telangiectasia mutated (ATM) kinase which activates other proteins, such as p53, Chk2, BRCA1, H2AX etc., involved cell-cycle checkpoints and DNA repair. This mechanism may affect radiotherapy sensitivities of the cancer patients. The aim of this study is was to evaluate the status of Tip60-ATM complex in molecular subtypes (Luminal A and B, Her2+, and Triple-) of breast cancer. For this purpose, firstly, mRNA expression levels of Tip60, ATM, p53, BRCA1, Chk2 and H2AX measured by qRT-PCR in normal and tumor tissues of breast cancer patients and normal tissues of healthy individuals. When we compared mRNA expressions in normal tissues of total patients with healthy controls, we did not find statistically significant differences ($p>0.05$). In the total patient group, Tip60, ATM, and BRCA1 expressions decreased ($p=0.08$, $p=0.01$, and $p=0.017$, respectively) and p53, Chk2 increased ($p=0.048$ and $p=0.130$, respectively) in tumor tissues than those in normal tissues in the same patients. According to the subtypes, 47% of Lum A patients, 16.7% of Lum B patients, 56.3% of Triple- patients and 27.3% of Her2+ patients had shown higher Tip60 mRNA expression levels in tumor tissues than in their normal tissues. Similar results were obtained for the other genes and statistically significant differences were observed in normal tissue expressions of almost all genes between Lum B with Lum A and Triple (-) groups. Also, there are significantly positive correlations among genes in the total group, and subtypes, especially in Lum A and Lum B groups. In conclusion, results obtained in this study suggest that patients with higher gene expression ratios in tumor tissues than in normal tissues may have lower radiotherapy sensitivities due to the role of Tip60 complex in the repair of DNA damage. Inhibition of Tip60 could be used as a novel radiosensitizing target for breast cancer patients.

Biography

Ece Salihoglu attended primary, secondary and high school in Ankara. She graduated from the Department of Biology Education of Hacettepe University in 2007. She earned her Master's Degree in Biochemistry from Gazi University, Faculty of Pharmacy in 2011. Then she started her PhD program at the same department and will finish on January. She is currently working on DNA repair mechanism in breast cancer.

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