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THE EFFECT OF SILENCING THE Tip60 GENE ON THE RESPONSE TO RADIOTHERAPY IN BREAST CANCER CELLS

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ABSTRACT

One of the most important problems encountered in patients with triple-negative breast cancer (BC) treatment is the inadequate response of tumor tissue to treatment. The high expression of the Tip60, which is involved in the repair of DNA double-strand breaks, will increase the repair of DNA damage to be created in tumor cells, especially during the radiotherapy treatment process, thus reducing the treatment response and having a negative effect. In this study, the *Tip60* gene was silenced using siRNA in MCF-7 and MDA-MB-231 cell lines, and their response to radiotherapy was monitored. To determine whether gene silencing was successful or not, Tip60 mRNA and protein expression values were measured. Cytotoxicity and DNA damage in UV-treated cells were analyzed by MTT and COMET methods, respectively. According to the results of the study, more DNA damage was observed in the MCF-7 in which the *Tip60* gene was silenced and UV-treated compared to the non-*Tip60* gene-silenced and UV-treated cells. On the other hand, more DNA damage was observed in the MDA-MB-321 in which the *Tip60* gene was non-silenced and applied UV, compared to the cells in which the Tip60 gene was silenced. However, excessive DNA damage was already observed in the untreated MDA-MB-231. According to the results, silencing of the TiP60 gene in the MCF-7 may be beneficial in reducing resistance to radiotherapy, but no effect is expected in the MDA-MB-231. This can be explained by the fact that they are heterogeneous tumors. These data could use for future treatment development studies.
Keywords: Breast cancer cells, Tip60, siRNA, Radiotherapy, Comet