عنوان مقاله:

Valproic Acid-Mediated Reduction of DNA Double-Strand Break Reparation Capacity of Irradiated MCF-7 Cells

محل انتشار:

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خلاصه مقاله:

Introduction H istone deacetylase inhibitors (HDIs), as radiation sensitizing agents, are considered as a novel class of anti-cancer factors, which are studied in various tumor cell-lines. Valproic acid (VPA) is an HDI, which is effectively used in the treatment of epilepsy, migraines, and some particular types of depression. In this study, we evaluated the effects of VPA and ionizing radiation separately, as well as combined, with the alterations of histone H2AX phosphorylation (γH2AX) at Ser139, a marker of DNA damage and its repair, on MCF-7 breast cancer cell line. Materials and Methods Three groups of cells were selected, including 1) pretreated with VPA for 48 h followed by irradiation, 2) VPA only, and 3) irradiation only. The levels of γH2AX expression were evaluated using Western blot. Results The results of our study showed that VPA signifi cantly enhanced the expression of γH2AX, when applied 48 h prior to irradiation compared to the IR or VPA only treated cells. We also concluded that VPA pre-treatment delayed γH2AX dephosphorylation and dispersal for up to 12 h after irradiation, while γH2AX dephosphorylation disappeared in just 2 h when using irradiation alone and without VPA pre-treatment. Conclusion Our findings are consistent with the general consensus that VPA efficiently sensitizes cancer cells to the effects of ionizing radiation and prevents .DNA double-strand break repair, which leads to enhanced breast cancer cell death

کلمات کلیدی:

Valproic acid, Radiosensitizer, γH2AX