عنوان مقاله:

Mitochondrial Targeted Peptide (KLAKLAK)۲, and its Synergistic Radiotherapy Effects on Apoptosis of Radio Resistant Human Monocytic Leukemia Cell Line

محل انتشار:

مجله فیزیک و مهندسی پزشکی, دوره 11, شماره 2 (سال: 1400)

تعداد صفحات اصل مقاله: 10

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خلاصه مقاله:

Background: Ionizing radiation plays a significant role in cancer treatment. Despite recent advances in radiotherapy approaches, the existence of irradiation-resistant cancer cells is still a noteworthy challenge. Therefore, developing novel therapeutic approaches are still warranted in order to increase the sensitivity of tumor cells to radiation. Many types of research rely on the role of mitochondria in radiation protection. Objective: Here, we aimed to target the mitochondria of monocyticleukemia (THP-۱) radio-resistant cell line cells by a mitochondrial disrupting peptide, D (KLAKLAK)۲, and investigate the synergistic effect of Gamma-irradiation and KLA for tumor cells inhibition in vitro. Material and Methods: In this experimental study, KLA was delivered into THP-۱ cells using a Cell-Penetrating Peptide (CPP).The cells were then exposed to gamma-ray radiation both in the presence and absence of KLA conjugated with CPP. The impacts of KLA, ionizing radiation or combination of both were then evaluated on the cell proliferation and apoptosis of THP-۱ cells using MTT assay and flow cytometry, respectively. Results: The MTT assay indicated the anti-proliferative effects of combined D (KLAKLAK)۲ peptide with ionizing radiation on THP-۱cells. Moreover, synergetic effects of KLA and ionizing radiation reduced cell viability and consequently enhanced cell apoptosis. Conclusion: Using KLA peptide in combination with ionizing irradiation increases the anticancer effects of radio-resistant THP-۱ cells. Therefore, the combinational therapy of (KLAKLAK)۲ and radiation is a promising strategy for cancer treatment .the in future

کلمات کلیدی:

Combination Therapy, Ionizing radiation, Radio-Resistance, Mitochondria, Pro-Apoptotic Peptide, Antimicrobial Peptide, Cell Survival, Flow cytometry