J Oncol Transl Res 2018, Volume 4
DOI: 10.4172/2476-2261-C1-003



# Potential of ellagic acid mediated enhanced radiosensitivity of breast tumor cells to γ radiation in improving cancer radiotherapy

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It is a common observation that radiosensitive tumor can be better cured than a radioresistant tumor which is generally accompanied by local recurrence and metastasis. Therefore, the goal of increasing tumor radiosensitivity continues to occupy a central focus in research. Herbal polyphenols have been receiving increasing importance because they enhance radiosensitivity of a variety of tumor cells mainly involving the modulation of intracellular signaling mechanisms. This presentation describes the effect of the flavonoid, ellagic acid (EA), on γ irradiated breast cancer cell line in vitro. Studies from our laboratory have shown that EA produced a radioprotective effect on NIH 3T3, a model of the normal cell by the mechanism of facilitating recovery from radiation damage. On the other hand, irradiation of tumor cells in presence of EA (10μM) to doses of 2 and 4Gy of γ radiation produced marked synergistic tumor cytotoxicity in MCF-7 cells. A combined treatment of EA and radiation increased cellular death by 21.7 and 20.7% to 2 and 4Gy respectively. Further studies showed increased apoptosis in EA+2Gy and EA+4 Gy treated cells in the sub G1 phase of the cell cycle together with the up-regulation of pro-apoptotic Bax and down-regulation of Bcl-2 in the cells. Moreover, the combined treatment of EA and IR produced a 6.2 fold decrease in the mitochondrial membrane potential. It is concluded that EA may be a potential drug adjuvant for increasing tumor toxicity and reducing the normal cell damage relevant for improving cancer radiotherapy.

**Notes:**