

Efficacy of combined effect of radiotherapy and hypericin mediated PDT in hepatic cell line of Hep G2

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Ionizing radiation can result in reproductive death by inducing single strand and double strand DNA break in malignant cells. In order to improve the efficacy of radiotherapy, it is possible to combine it with other modalities such as photodynamic therapy (PDT). PDT includes the local or systemic administration of a photosensitizer that upon irradiation with visible light and in the presence of oxygen, results in tumor destruction. Hypericin is a natural photosensitizer that absorbs light in the range of UV and visible light. Upon photoactivation, hypericin produces reactive oxygen species, acts as a strong inhibitor of PKC, induces membrane lipid peroxidation, and damages mitochondrial function and anti-oxidant systems. Hypericin can also act as a radiosensitizer since it can inhibit PKC. So we decide to determine its efficacy as a radiosensitizer and photosensitizer in a combining treatment in Hep G2 cells.

HepG2 cells were cultured and the doubling time and plating efficiency was determined. The toxicity of Hypericin was determined using trypan blue dye exclusion assay. Colony assay was used to determine the effect of Hypericin as a radiosensitizer alone and in combined with PDT treatment.

Keywords: radiotherapy, photodynamic therapy, hypericin